

Ethiopian Economics Association

Report on the Ethiopian Economy



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REPORT ON THE ETHIOPIAN ECONOMY

2012

***Transport Sector Development in
Ethiopia: Performance, Policies and
Its Role in the Economy***

**Ethiopian Economics Association
(EEA)**

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Foreword

Ethiopia has experienced rapid economic growth over the last several years. Circumstances, both local and international, are changing fast and new challenges and opportunities are emerging. There is a need for reliable mechanism not only to gauge the changing circumstances but also enable the public to constructively engage both in the process of making policy and in the process of evaluating the performance of established policies. All these require reliable information. Indeed, the availability of relevant knowledge rigorously produced by independent professional on matters related to the economy on continuous, systematic and constructive form to the general public and policy makers is indispensable.

Against this background, the Ethiopian Economics Association has produced this economic report with the aim of highlighting and suggesting some policy actions targeted to some of the critical development challenges facing the country. Following the formats of previous years, this report is divided into two parts. Part one focuses on a broader review of the macroeconomic situation and the performance of the economy at the sectoral levels for the period 2011/2012, while part two unveils the development challenges related to the transport sector. The first part the report tries to provide a professional assessment of the existing policies and strategies and recommends new policy directions wherever appropriate. The report reviews the recent encouraging growth trends, but also cautions against complacency.

The theme of this report, ***Transport Sector Development in Ethiopia: Performance, Policies and its Role in the Economy***, is in line with the country's development blueprint as expressed in the Growth and Transformation Plan (GTP). The plan identifies transport as a sector with significant contribution to national development. The focus on transport is a

timely contribution to the understanding of the sector and its relative contribution to the economy. The report attempts to identify the key economic concerns as related to the sector and the policy implications related to the transport sector.

While transport alone may not be a sufficient condition for development, the lack of transport infrastructures could be a serious impediment to development. Transport is critical for an economy since it integrates the different parts. The lack of transportation infrastructures will have serious impact on the economic development not only by conferring higher transport costs, but also because of delays rendering supply chain management unreliable. The report argues that when transport systems are efficient, they provide economic and social opportunities and benefits that result in positive multipliers effects such as better accessibility to markets, employment and additional investments. But when deficient in terms of capacity or reliability, they can have economic cost such as reduced or missed opportunities. Transport also carries an important social and environmental load, which cannot be neglected.

Despite its critical role, there is limited analytical work on the sector and its contribution to the economic growth and development of the country. Hence it is important to map the infrastructures network and growth corridors in the country and forward policy suggestions. Casual observation also shows high degree of inefficiency within the sector. Due to lack of transport facilities export commodities are wasted and quality deteriorates. Despite the proportionally low vehicle per capita, the country has also witnessed the highest accident rates.

Hence, it is vital to assess the monitoring and regulatory framework applicable to the sector so that accidents are minimized, resource wastages avoided and

efficiency of the sector improved. The Report examines the evolution of the transport system, the current state of the sector as well as the policies and strategies adopted in the country. It also establishes the link between transport and the economy and examines that discusses energy, safety and environment issues and put forward some policy recommendations that would help to address the problems affecting the sector and improve its efficacy.

We sincerely hope that the report would be useful to all readers including policy makers, private business people, civil society organizations, the academia, the media, the international communities and the general public.

And finally, I would like to express my appreciation to all those people, including researchers at the EEPRI and staff of the EEA's Secretariat, whose contribution has made this report possible.



Alemayehu Seyoum Taffesse (DPhil)
President
Ethiopian Economics Association

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The chapters on the Performance of the Agricultural sector and the chapter on Investment in Commercial Agriculture in Ethiopia are written by Dr. Bekele Hundie and Dr. Samuel Gebreselassie. Ato Amin Abdella wrote the chapter on the Manufacturing Industries Performance: Comparative Analysis of Export focused sub Sectors. The chapter on the Performance of the Higher Education Sub sector was written by Dr. Degnet Abebaw, Ato Fitsum Zewdu and W/t Israel Fekade. Their intellectual contributions and hard work deserve special thanks and acknowledgement.

The thematic chapters on “Transport Sector Development in Ethiopia: Performance, Policies and its Role in the Economy” were primarily prepared by a team composed of Amin Abdella, Getachew Ahmed and Solomon Mosissa. Their perseverance, hard work and intellectual contribution is highly appreciated. The contributions by Ato Temesgen Aklilu are also acknowledged.

Valuable guidance throughout the report's preparation was provided by the members of the Executive Committee of EEA comprising of Dr. Alemayehu Seyoum Taffesse, Dr. Tadele Ferede, Dr. Gezahegn Ayele, W/o Etalem Engeda, W/o Sindu Abebe, Dr. Fantu Guta, Dr. Amdissa Teshome, and Demirew Getachew. Special thanks also go to Dr. Yonas Admassu who served as a language editor at least for some of the chapters. Our thanks also go to Rahel Yilma for preparing the manuscript for printing. The Finance and Administration Divisions as well as the documentation centre provided valuable administrative and logistical supports towards realizing this Report. The other staffs of the Association have also contributed their share for the success of this project.

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PART I

REVIEW OF ECONOMIC PERFORMANCE

The fiscal year 2010/11 is the first year of implementation of the GTP. The first part of the report reviews major macroeconomic and sectoral performance of the Ethiopian economy during the first year of GTP. The first chapter of the report discusses major macroeconomic developments in 2010/11. Comparisons are made with economic performances during the period of the Plan for Accelerated and Sustained Development to End Poverty (PASDEP).

The second chapter reviews performances of the agriculture sector for the period 2010/11. Chapter three of the report examines investment in commercial agriculture in Ethiopia. Chapter four focus on the performance of the manufacturing industry. It makes a comparative analysis of the export-focused sub-sector. Chapter five presents performance of the higher education sub-sector in Ethiopia.

Chapter One

Macroeconomic Performance

1.1 Growth

According to the official figures from the Ministry of Finance and Economic Development (MoFED), the Ethiopian economy measured by real GDP has been reported to have grown by 11.4 percent in the year 2010/11. The service sector, irrespective of its deceleration, has maintained its lead in the economy with 45.6, and 50 percent shares in the GDP, and growth, respectively. While the agricultural sector grew at a rate 1 percentage points higher than the target, the industrial sector performed 5 percentage points lower than the base case scenario target of the growth and transformation plan (GTP). The real estate, renting, and business activities accounted for 38, and 19 percent of the growth in the value-added of the service sector, and growth in GDP, respectively. Value-added in crop production still dominated the growth in agriculture. While the spur in the industrial sector is largely accounted by the construction sub-sector, the manufacturing sub-sector had also a one-third share in the growth of the value-added in the sector.

The five year development plan known as the growth and transformation plan (GTP) that has been launched in 2010/11 puts economic growth as the major pillar strategy necessary to eradicate poverty. The plan anticipates that the industrial sector would grow faster than other sectors to ensure that the sector would be in a position to take the lead in the economy by the end of the GTP. On the other hand, the service sector which led the growth during

PASDEP was targeted to decelerate. Table 1.1 shows the GTP targets for the growth rates of each sector at a base case and high case scenarios. Value-added in the agriculture is targeted to grow at 8.1 percent at the base case scenario for the plan period (2010/11-2014/15). In the high case scenario, the value-added in the sector is anticipated to grow at an average rate of 14.9 percent which is almost double the planned rate of growth at the base case scenario [See Table 1.1].

Table 1.1: The Growth Targets in the GTP by Sector and 2010/11 Actual

Sector	GTP Five Year Average (2010/11-2014/15)		Actual 2010/11
	Base Case	High Case	
	Agriculture and allied activities	8.1	14.9
Industry	20.0	21.4	15.0
Services	11.0	12.8	12.5
Real GDP	11.2	14.9	11.4

Source: Ministry of Finance and Economic Development

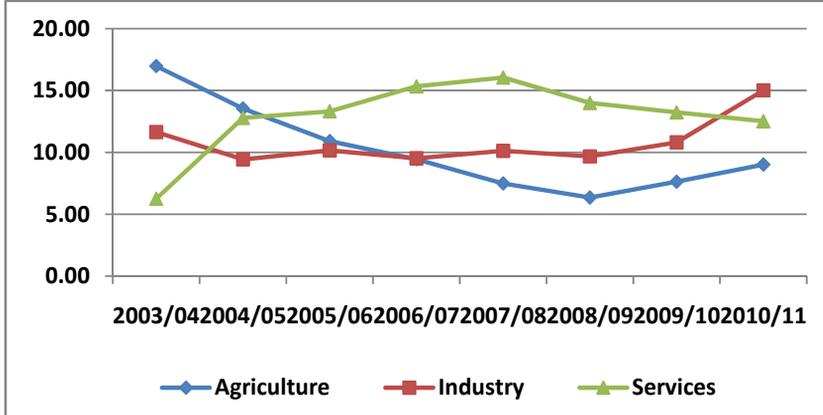
Real GDP is reported to have grown by 11.4 percent during the first year of the GTP (2010/11). It is for the fifth time in eight years that the Ethiopian GDP grew by about 11 percent. The rates recorded for the other three years are not much in deviation from the 11 percent average growth rate: 12.6 percent in 2003/4, 10.4 percent in 2008/9, and 10.6 percent in 2009/10. While one can sense that there are signs of high economic growth episodes in the country, the deterministic nature of the growth shades doubt on the accuracy of measuring the GDP in the sense that labor, capital, technology, and most importantly nature cannot be so perfect to give a highly predictable constant rate of growth such as this. This happens in spite of the fact that a number of shocks such as drought and international financial crisis put the economy to the test. Even in times when the global financial and economic

crisis threatened the international economy, the Ethiopian economy is reported to have recorded as high as 10.1 percent growth.

Leaving the issue of both the quality of data and the quality of growth aside, the high level of growth would put Ethiopia among the fastest growing economies in the world. According to the World Economic Outlook (September 2011) Ethiopia ranks fourth in the world among the fastest growing countries after Azerbaijan, Qatar and Angola for the period between 2005 and 2009. All of these three countries are oil producing and exporting countries.

The rates of the growth of the value-added in the agriculture, industry, and service sectors that are recorded in the first year of the implementation of GTP are consistent with the aim of the plan. A successful structural change in the economy as is envisaged by the GTP requires that the industry in particular the manufacturing sector has to grow faster than other sectors.

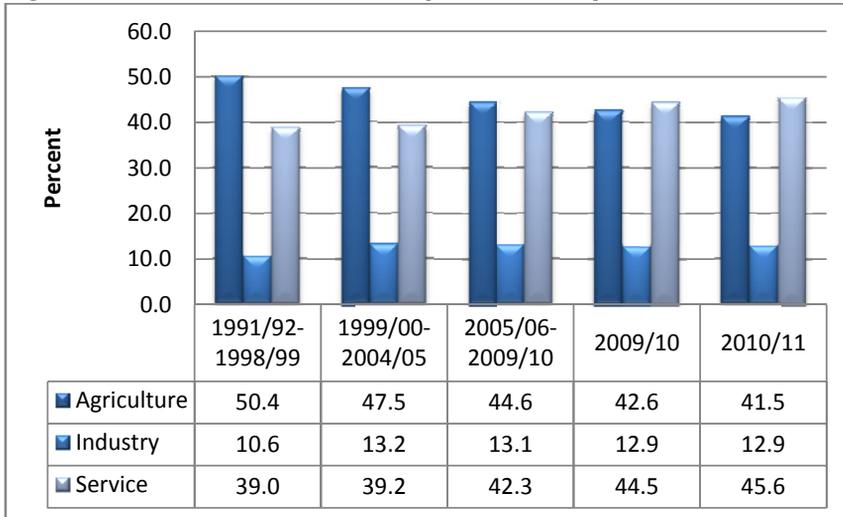
Figure I.1: Trends in Sectoral Real Output Growth



Source: Ministry of Finance and Economic Development

Given the low share of the industrial sector in the GDP (about 13 percent), it takes a while even with a high growth rate for the industrial sector to take the lead in the economy.

Figure 1.2: Structure of the Ethiopian Economy



Source: Ministry of Finance and Economic Development and EEA Computations

The performance of the agricultural sector in 2010/11 appears to tally with the target rate of GTP at the base case scenario. Figures from MoFED show that value-added in the sector grew by 9 percent- 1 percentage point higher than the target rate. Normally, a higher growth rate in agriculture is not expected to last longer. A targeted average growth rate of 8.1 percent for the five years period requires that agriculture first grows at a rate higher than the target rate and then decelerate at even below the target rate.

Table 1.2: Growth Rates

Period	Agriculture	Industry	Services	Total GDP	Per capita GDP
1960/61-2010/11	1.96	3.93	5.02	3.08	0.48
1960/61-1973/74	2.10	7.04	7.47	3.60	1.33
1974/75-1990/91	0.60	3.60	3.41	1.75	-0.71
1991/92-2010/11	4.41	7.38	8.68	6.37	3.57
1991/92-1999/00	2.11	6.38	7.99	4.56	1.78
2000/01-2004/05	5.55	8.20	6.70	6.22	3.30
2005/06-2009/10	8.47	10.89	14.07	11.15	8.13
2009/10	7.63	10.58	13.04	10.42	7.41
2010/11	8.97	15.26	12.73	11.49	8.45

Source: Ministry of Finance and Economic Development and EEA computations

Value-added in the industrial sector of which the construction sub-sector is a part grew by 15 percent. The construction and manufacturing sectors accounted for 38.3, and 31.2 percent of this growth, respectively. Realization of the targeted 20 percent average growth in the industrial sector for the period of GTP requires that the sector accelerates in the coming years.

In the year under review, value-added in the service sector grew at a rate of 12.5 percent. Even though it showed a deceleration from the 14.3 percent growth rate during the PASDEP (Plan for Accelerated and Sustainable Development to End Poverty), the sector still maintained its lead on the economy. It has a share of 45.6 percent in GDP and 50 percent in the GDP growth. The GTP envisages an average growth rate of 12.8 percent in the sector.

Table 1.3: Growth Decomposition by Sector

	2000/01-2004/05		2005/06-2009/10		2010/11	
	Weighted Growth	Share in Growth	Weighted Growth	Share in Growth	Weighted Growth	Share in Growth
Agriculture, Hunting and Forestry	2.54	40.46	3.84	34.24	3.78	32.87
Crop	2.01	32.10	2.90	25.81	2.86	24.87
Animal Farming and Hunting	0.38	6.11	0.82	7.30	0.82	7.16
Forestry	0.14	2.26	0.13	1.13	0.10	0.83
Fishing	0.00	-0.04	0.00	0.02	0.00	0.01
Industry	1.09	17.30	1.33	11.88	1.96	16.98
Mining and Quarrying	0.02	0.39	0.05	0.42	0.27	2.33
Manufacturing	0.27	4.25	0.50	4.50	0.60	5.24
Large and Medium Scale Manufacturing	0.16	2.57	0.41	3.63	0.50	4.34
Small Scale and Cottage Industries	0.11	1.68	0.10	0.86	0.10	0.90
Electricity and Water	0.14	2.28	0.15	1.31	0.34	2.98
Construction	0.65	10.39	0.63	5.65	0.74	6.43
Services	2.65	42.28	6.04	53.86	5.77	50.14
Whole Sale and Retail Trade	0.71	11.33	1.82	16.23	0.80	6.95
Hotels and Restaurants	0.17	2.65	0.66	5.90	0.95	8.28
Transport and Communications	0.63	9.99	0.57	5.06	0.56	4.88
Financial Intermediation	0.12	1.91	0.37	3.31	0.56	4.90
Real Estate, Renting and Business Activities	0.76	12.11	1.39	12.38	2.18	18.94
Public Administration and Defense	-0.18	-2.92	0.48	4.27	0.41	3.55
Education	0.28	4.49	0.44	3.94	0.15	1.28
Health and Social Work	0.07	1.14	0.15	1.38	0.07	0.63
Other Community, Social & Personal Services	0.09	1.36	0.14	1.29	0.08	0.65
Private Households with Employed Persons	0.01	0.21	0.01	0.10	0.01	0.08
Total	6.27	100.00	11.22	100.00	11.51	100.00

Source: EEA computations using data from MoFED.

In recent years (past three years), the growth of the service sector depicts a declining trend while that of the agricultural and industrial sectors is increasing. This is in line with the GTP target of enhancing the development of the productive sectors, industrial and agricultural sectors.

1.1.1 Agriculture

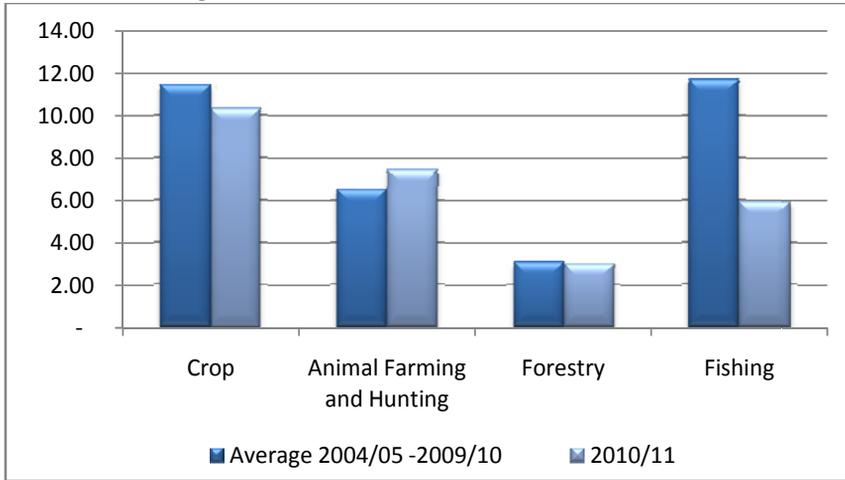
Agricultural transformation has always been the major growth strategy in the country. The value-added in the sector grew by 9.6 percent in real terms in 2010/11. About 76 percent of this growth came from the crop production. While it is intuitive to associate the high growth rate in the service sector with the rate of high inflation in the country, the failure of the crop-led growth in the agricultural sector to dampen the inflation is difficult to explain.

Crop production grew by 10.3 percent in 2010/11. It accounted for about 25 percent of the growth in the GDP. Nevertheless, the more sustainable growth in the agriculture sector is not likely to come from the traditional crop. It rather requires developing the untapped sectors such as livestock, fishery, horticulture, and non-traditional crops such as cotton. Animal farming and hunting grew by 7.5 percent in 2010/11 showing an increase compared to the average growth rate of 6.5 percent during the PASDEP period. This subsector takes up 26 percent of the total agricultural GDP and contributes to 22 percent of the growth in the sector. Forestry and fishing have a small share and contribute marginally to the growth of the agricultural sector.

The Chinese experience shows that even during the heyday of the country's agricultural development when the overall agriculture sector grew by 7.7 percent between 1978 and 1984, grain production grew at an average rate of only 4.8 percent. Grain production fell by 0.2 percent the following four years. Cotton, animal husbandry, fishery, forestry, and other non-traditional

agricultural activities grew at rates between 10 to 19 percent per annum (Lin, 1992). Ethiopian agriculture can take a lesson from this experience.

Figure 1.3: Comparison of Growth of the Subsectors in the Agricultural Sector



Source: Ministry of Finance and Economic Development

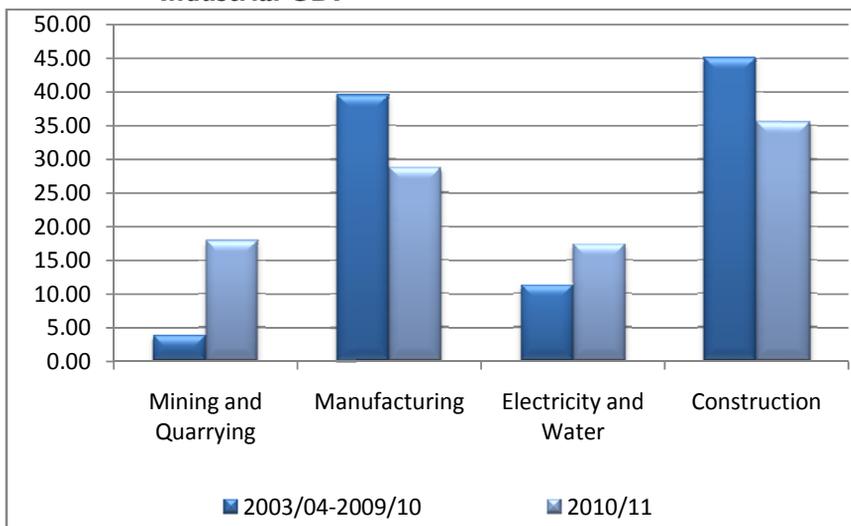
1.1.2 Industry

The value-added in the industrial sector accelerated from a rate of growth of 9.6 percent during the PASDEP period to 15 percent in 2010/11. The construction subsector has the biggest share in the industrial sector accounting for 44 percent of the total value addition in the industrial sector. In 2010/11, this subsector grew by 12.8 percent and contributed to 38 percent of the growth of the industrial sector.

The other major contributor to the growth in the industrial sector next to the construction subsector is the manufacturing subsector. It grew by 12.7

percent in 2010/11 which is higher than the usual trend of around 10 percent. This subsector accounted for 31 percent of the growth in the industrial sector. This share contrasts with the 38 percent contribution of the subsector to the total value addition in the industrial sector during PASDEP. The major objective of the GTP is to increase the manufacturing component of the industrial sector.

Figure 1.4: The Contribution of Subsectors in the Growth of Real Industrial GDP



Source: Ministry of Finance and Economic Development

The other two subsectors, mining and quarrying, and electricity and water have performed exceptionally well during the review year. Mining and quarrying grew by 57 percent in real terms during 2010/11 outperforming its average growth rate of 12 percent during the PASDEP period. The demand for the output of this sector partly comes from the construction sector. Therefore, the growth in the mining and quarrying sector can be attributed to the significant growth in

the construction sector. Moreover, the mining of gold by small scale miners has increased significantly.

Value-added by the electricity and water increased by a significant rate of 19 percent in 2010/11 in contrast to its 7 percent growth during the PASDEP period. Accordingly, it contributed to 17 percent of the growth in the industrial sector rising from its trend of 11 percent.

1.1.3 Services

The service sector still dominates the overall economy. In the year under review, value-added in the sector grew by 12.5 percent in real terms. Even though this rate of growth contrasts with the 14 percent rate of growth of the value-added in the sector during PASDEP, it still accounts for about 46 percent of the GDP and 50 percent of the growth in GDP. The government set out in the GTP to redirect the lead of the service sector in the economy towards the other two key sectors, agriculture and industry.

About 38 percent of the growth in the service sector is the share of the value-added in the subsector real estate, renting and business activities. That means this subsector alone accounted for about 19 percent of the growth in GDP in the fiscal year 2010/11. The subsector had a share of 12 percent in the growth of GDP during PASDEP.

In contrast, the share of retail and wholesale trade in the growth of GDP declined from 16 percent during PASDEP to about 7 percent in the first year of the GTP (2010/11). Because it is normally believed that the growth in the output of wholesale and retail trade is catalyzed by growths in the agriculture, industry, and external trade, the deceleration of the growth in the subsector

is unexpected while the agriculture and other productive sectors are reported to have performed substantially.

1.2 Saving and Investment

Rate of gross domestic saving rose to 7 percent of GDP in 2010/11 from a rate of 5.5 percent in the preceding year. Gross fixed capital formation in the same year expanded to 25.5 percent. The resource gap, which is a measure of the degree of the country's dependency on foreign resources, reached 18.6 percent of GDP. A significant part of the gap is filled by net transfers from the rest of the world. The national saving rate to which the net transfer is a part stood at 23 percent of GDP.

In spite of a -33 percent real interest rate, saving deposits increased significantly in 2010/11. The private investment in the past few years is dominated by foreign direct investment.

Mobilization of resource from the domestic sources both in the form of domestic private saving and government revenue has been identified as a critical component in the financing of the GTP. Gross domestic saving is targeted to reach 15 to 17 percent of GDP by the end of the GTP period. In the first year of the plan, gross domestic saving stood at 7 percent of GDP—a 1.5 percentage point increase over the fiscal year 2009/10.

Gross fixed capital formation continued to expand to reach 25.5 percent in 2010/11. Rate of fixed capital formation in the preceding year was 22.3 percent. The other side of the relatively high rate of capital formation in the face of low rate of gross domestic saving is the widening resource gap. The degree of dependency of the country on foreign resources for its investments measured by the resource gap as percentage of GDP stood at 18.5 percent-

about 2 percentage points wider than what has been recorded in the preceding year.

According to the national income accounts, the gross national saving of Ethiopia in the year under review was 23 percent of GDP. The major source of the national saving over and above the gross domestic saving (which is about 16 percent of GDP) is net current transfers from the rest of the world.

Table 1.4: Expenditure on GDP (as percent of GDP)

Period	Absorption			Current Account Balance				
	Total	Private Consumption	Government Expenditure	Gross Fixed Investment	Gross Domestic Savings	Resource Gap	Exports	Imports
1960/61-72/73	101.5	78.8	9.9	12.8	11.3	1.5	10.6	12.1
1973/74-90/91	105.5	77.4	15.9	12.2	6.7	5.5	10.3	15.8
1991/92-99/00	109.3	81.0	12.9	15.4	5.7	9.7	12.2	21.9
2000/01-04/05	115.5	78.8	13.7	23.0	7.8	15.2	13.3	28.1
2005/06-09/10	117.6	84.1	9.8	23.7	6.1	17.6	12.4	32.2
2006/07	117.1	80.8	10.5	25.8	8.7	17.1	12.7	32.0
2007/08	117.1	85.0	9.8	22.4	5.2	17.1	11.4	30.8
2008/09	116.3	85.4	8.2	22.7	6.4	16.3	10.5	28.7
2009/10	116.8	86.1	8.3	22.3	5.5	16.8	13.6	33.0
2010/11	118.6	83.2	9.8	25.5	7.0	18.6	16.8	31.8

Source: Ministry of Finance and Economic Development and EEA Computations

The government developed different instruments by which it can mobilize financial saving from the public. In order to facilitate this, in the review period the government introduced instruments like the Millennium Dam Bond by which it has managed to raise around Birr 7 billion. Banks are using different

mechanisms to attract deposits by increasing their branch networks and marketing their services.

In general, saving and time deposits together increased by 33 percent. But this happens in the face of negative interest rates. With 38.1 percent inflation rate in June 2011, the 5 percent nominal interest rate on deposits yields -33.1 percent real interest rate. Two points are worth noting. First, agents may not be saving in response to the marginal rise in inters rate; rather they may use banks simply as a means of safe custody for their liquid asset. Second, the rise in deposits should be scrutinized for its purchasing power in the face of high inflation that the country is witnessing

The role of government in the fixed capital formation is significant. Government capital expenditure increased significantly in 2010/11. Approximately 95 percent of capital expenditure is considered investment. On the private investment side, the data from Ethiopian Investment Agency indicates that foreign direct investment dominated the scene in 2008/09 and 2009/10 investing mainly in agriculture (32 percent) and manufacturing (48 percent) projects. This raised the total investment capital that went operational to Birr 4.3 billion in 2008/09 and Birr 3.9 billion in 2009/10. However, in 2010/11 the total investment capital that went operation was only Birr 231 million which only amounts to about 6 percent of the capital in 2009/10. Close to 74 percent of this investment is domestically sourced. Therefore, it can be argued that government investment was dominant compared to private investment during the year under review.

1.3 Price Developments

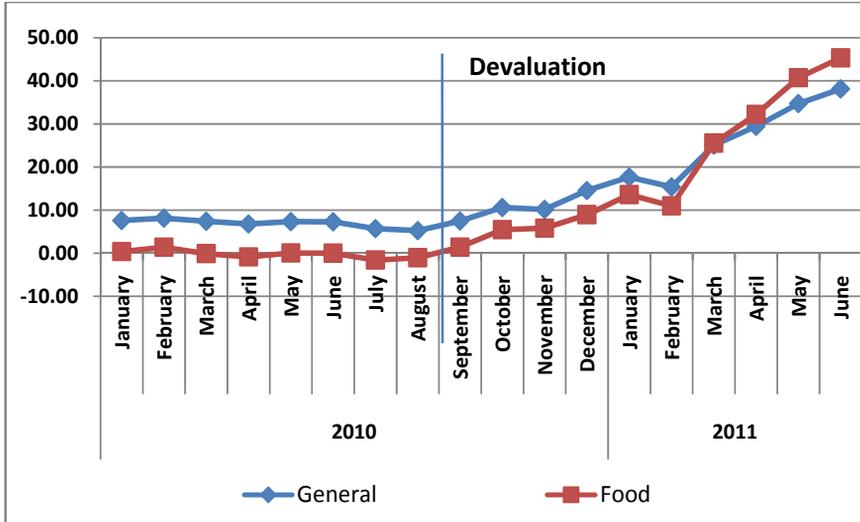
One of the promises of the GTP was arresting inflation to single digit while maintaining high growth of the economy. The policy and administrative measures that were implemented were not however consistent with the intention of taming inflation. Devaluation of the Birr, the price cap on basic commodities, the rise in the salary of the civil servants, and the aggressive public investments along with high rate of expansion of the money supply are believed to have had the potential to push the inflation up. The general inflation stood at 38.1 percent in June 2011. The month-to-month annualized inflation in the same year was 17.8 percent. The significant rise in the general price was dictated much by the rise in food prices. Food price inflation was 45 percent in June 2011. Non-food price inflation stood at 27 percent during the same period.

Inflation has probably been the most pressing issue in the Ethiopian economy in the past six years. High rates of inflation accompanied rapid economic growth. Annual general inflation at national level reached a peak of 64.1 percent in July 2008 and then came down in 2009 and early 2010. However, because of different reasons it surged back in the late 2010 period and reached 38.1 percent in June 2011. The month-to-month annualized inflation in 2010/11 stood at 17.8 percent.

General prices are driven mainly by the movements in food prices which make up 57 percent of the weight in the consumption basket. Thus, most of the volatility is explained by the movements in food prices. Food inflation in June 2011 reached 45 percent which is considered very high. This has its own impact on poverty especially urban centers. Inflation for non-food items has been relatively stable. Annual non-food inflation in June 2011 reached 27

percent. Non-food inflation, though it had a lower rate, followed similar trend with food inflation.

Figure I.5: Trends in Annual General Inflation (percent)



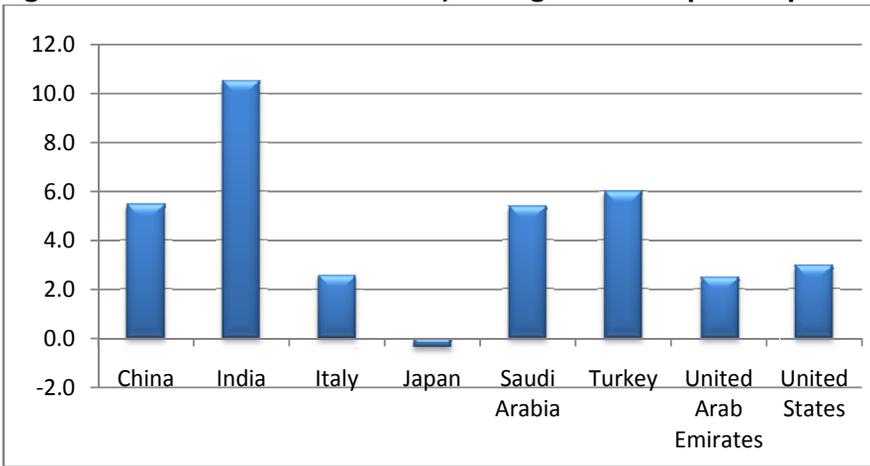
Source: Central Statistics Agency

One of the major reasons for the prices hike is believed to be the devaluation that occurred in September 2010. With 17 percent devaluation in September 2010, prices of both food and non-food items started to surge. The government had planned to bring inflation down to single digit by December 2010.

However, the policy and administrative measures taken by the government were not consistent with the intension of reducing inflation to single digit. The devaluation of the Birr against US dollar was one case in point. The price cap that was imposed on a number of major commodities by the government in January 2011 was the other intervention that worked against the plan. This futile attempt to control prices resulted in disturbances in the market. After

realizing that the price cap did not work, the government removed the restriction except for few commodities which again resulted in sharp increases in general prices in March 2011. The salary increment to the civil servants, and the expansionary fiscal policies of the government could also be behind the rise in inflation. Other measures taken to curb inflation include the National Bank’s targeting of reserve money and the fiscal restraint observed during the year. These measures are explained in the following sections.

Figure I.6: Rates of Inflation in Major Origins of Ethiopia’s Imports

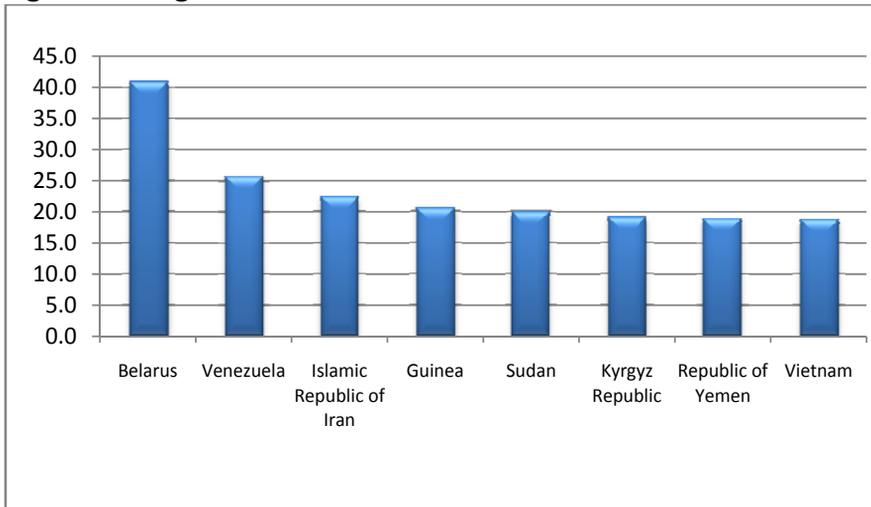


Source: World Economic Outlook 2011

Imported inflation may have also played a role in aggravating inflation in the country. International fuel and food prices increased significantly during this period (17 percent and 26 percent respectively in January 2011). Nevertheless, the imported inflation cannot be the major source of high inflation in Ethiopia. According to World Economic Outlook only three countries experienced more than 20 percent inflation during 2011: Belarus (42 percent), Venezuela (25 percent) and Iran (22 percent). Average global inflation slightly increased from 4 percent in 2010 to 6.5 percent in 2011. This

is mainly due to fuel and food price increases. Ethiopian inflation which was as high as 38 percent in June 2011 is not comparable to the 6.5 percent global inflation rate. Specifically, the countries which account for 60 percent of Ethiopian import had inflation rates less than 6 percent, except India that had a 10.6 percent inflation rate in 2011.

Figure I.7: High Inflation Economies



Source: World Economic Outlook 2011

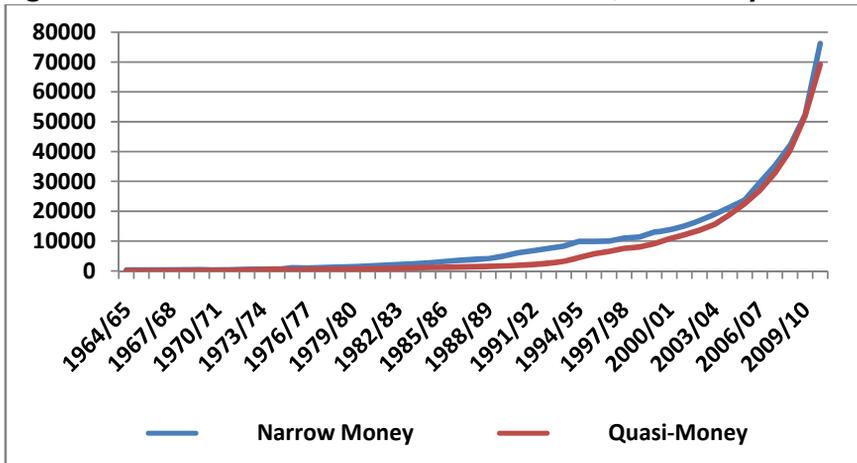
Among food items cereals has the biggest share. Annual cereal inflation in June 2011 reached 33 percent from -14.7 percent in June 2010. It can be seen that there has been a significant increase in prices starting March 2011. Other food items that recorded high inflation during the year include Coffee (113 percent), fats and oils (104 percent), pulses (72 percent), and spices (58.8 percent). However, these items have low shares in the household expenditure.

Among non-food items, prices for tobacco and transport and communication showed a significant rise during the 2010/11 fiscal year as they soared by 45, and 44 percent, respectively. Prices of personal care effects and clothing and foot-ware follow with respective rates of 39, and 35 percent. The increase in the price of transport and communication is mainly due to the increase in international fuel prices. Probably due to the devaluation, prices of personal care effects and clothing and foot-ware have also increased significantly. Among the baskets of goods and services, medical care and health services registered lower rates of inflation as prices of these services grew by 11.5 percent as at June 2011.

1.4 Monetary Developments and Policy

Broad money supply experienced a record high growth of 39 percent with a potential of aggravating inflationary pressures. Domestic credit as a major component of money supply has increased significantly and is skewed towards the government and public sectors. Net foreign assets experienced a significant build up. On the policy side, the National Bank of Ethiopia took some measures to curb inflation and mobilize domestic resources. These measures have had their own benefits and drawbacks

The upsurge in money supply that was observed during the PASDEP period continued in the first year of the GTP period. From an average of 21 percent growth in the PASDEP period, broad money supply grew by 39 percent in 2010/11. Demand deposit and currency outside banks together accounted for 51.8 percent of the broad money supply. The balance 48 percent was the share of quasi money. This significant increase in the money supply is presumed to be one of the aggravating factors for the rise in inflation in the second half of 2010/11.

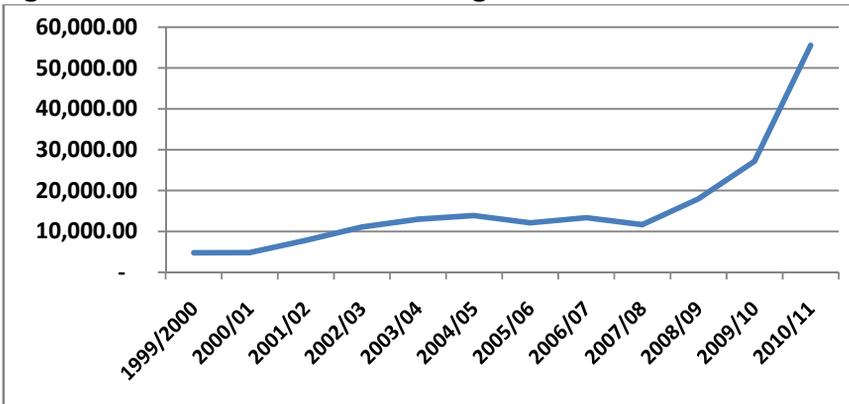
Figure 1.8: Trends in the Value of Narrow and Quasi Money

Source: National Bank of Ethiopia

The biggest component in the money supply is domestic credit. In 2010/11 domestic credit reached Birr 135 billion with a significant growth rate of 29 percent compared to the level in the previous year. In the Ethiopian case, the bulk of the domestic credit goes to the public sector and government owned enterprises (more than 60 percent in 2010/11). Normally, credits to the public sector finance infrastructure and capital projects. Due to the excessively skewed credit allocation towards the central government and public sectors, the private sector which is supposed to invest in short terms but productive projects may face credit constraints. This might constrain the supply of goods of immediate consumption.

Nevertheless, it can be equally argued that the private sector had been focusing on service related investment projects with quick return such as real estate, hotels and restaurants. Such investments have the tendency of aggravating inflation than dampening it.

Figure 1.9: Trends in Total Net Foreign Assets



Source: National Bank of Ethiopia

Net foreign assets showed a high growth of 104 percent in the 2010/11 fiscal year. One of the major reasons for this development is the devaluation of the Birr in September 2010. The devaluation may increase the volume of assets on two accounts. Firstly, the Birr value of existing foreign assets increases because of the change in value. Secondly, the increased exchange rate might have discouraged imports and encouraged exports. Whether the devaluation has helped increase the foreign assets is, however, an empirical issue. Data on Ethiopian trade shows that merchandise imports slightly declined during 2010/11 compared to a sharp rise in exports, net service receipts and private transfers.

With regard to monetary policy, the year 2010/11 saw a number of measures taken by the National Bank of Ethiopia. The Bank focused on reserve money as a monetary policy target. The devaluation of the Birr by 17 percent in September 2010 was one of the major measures taken in the fiscal year. The issuance of NBE Bill was also another important measure taken by the Bank.

Table 1.5: Growth Rates in Broad Money Supply and Its Components

	2000/01- 2004/05	2005/06- 2009/10	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Domestic Credit	9.398	21.13	22.28	25.46	29.31	11.55	17.05	29.82
Claims on Gov't	8.032	9.1	16.58	20.07	9.03	-0.87	0.69	-13.21
National Bank of Ethiopia	15.898	16.236	-2.27	30.16	42.45	6.84	4	15.21
Commercial Bank of Ethiopia	36.508	35.472	189.17	-11.16	-142.5	116.33	25.52	163.5
Claims on other Sectors	12.094	31.15	28.92	31.12	48.84	20.31	26.56	49.72
Broad Money	12.654	21.082	15.33	22.15	20.35	21.01	26.57	39.21
Narrow Money	10.318	19.844	11.84	24.38	19.36	19.13	24.51	45.27
Currency outside banks	11.316	19.434	13.93	20.01	28.78	11.67	22.78	34.57
Demand Deposits	9.576	20.446	9.98	28.42	11.23	26.57	26.03	54.44
Quasi-Money	15.746	22.454	19.26	19.8	21.45	23.04	28.72	33.09
Net Foreign Assets	25.834	18.056	-12.68	10.16	-12.55	54.1	51.25	104.25
Other items net	11.226	14.556	7.58	23.32	26.55	5.19	10.14	68.24

Source: National Bank of Ethiopia and EEA Computations

The National Bank of Ethiopia set reserve money as a monetary policy target to curb inflation in 2010/11. Reserve money, also known as base money or high powered money, is the sum of currency in circulation and commercial banks' reserves in the National Bank of Ethiopia.

The other important development is the issuing of the NBE Bill by the National Bank. The directive stipulates that private commercial banks are required to purchase the bill with 27 percent of the value of the loans they disburse with 3.1 interest rate.

The purchase of this bill has a number of implications. If private banks were engaged in financing short-term service related projects as it has been alleged, diverting the resource towards more productive projects could be justified. Nevertheless, unless private commercial banks disburse long term loans, the directive will affect their profitability as they buy the bonds with less interest rate than they pay for their deposits.

The NBE Bill may also constrain private banks in terms of available loanable funds thereby affecting the private sector. Private Banks may also change their loan composition in favor of a long term structure. Long term loan provision requires that banks build their capacity of analyzing the risk of long term projects in the presence of an unstable macroeconomic framework. If such capacity is not in place, they may not commit credit to such long term projects of more productive sectors. Instead, they may resort to extending the maturity period of the existing loans to escape the obligation of buying the NBE Bill. This may, in turn, cause inefficient allocation of financial resources.

1.5 External Sector

The devaluation in September 2010 may have been the cause behind the slowdown in imports. In addition to the possible impact of the devaluation, increase in international price for coffee and gold, and the continued expansion of the floriculture in the country might have contributed for the better performance of the export sector. Both capital goods import and consumer goods imports declined while fuel and semi-finished goods import increased. This, along with increasing private and public transfers reduced the normally high current account deficit. This was accompanied by a significant increase both in the net receipts of the private transfer and the capital account surplus to give an overall balance of payments surplus to the tune of USD 1.4 billion.

The 2010/11 fiscal year witnessed a significant build up in foreign reserves. For the year under review, overall balance of payments amounted to USD 1.4 billion growing from USD 279 million in 2009/10. While the trade balance is still high with a value of 5.5 billion USD, it has shown a narrow down by considerable rate of 14.3 percent. The major reason for this is the slight decline in the value of imports by 2.3 percent while exports grew by a significant 36 percent. Whether the devaluation had helped the Ethiopian export to perform well is an empirical issue. Nevertheless, the period enjoyed high international prices for coffee and gold. As a result current account deficit improved significantly from USD 3.2 billion in 2009/10 to USD 1.6 billion in 2010/11. Net service receipts also assisted this improvement in current account by recording a growth of 51.4 percent mainly driven by travel and other services.

Table 1.6: Balance of Payments (millions of USD)

Particulars	2008/09	2009/10	2010/11		Growth
	A	B	C	C/B	B/A
Trade Balance	-6278.6	-6426.8	-5508.9	-14.3	2.4
Exports	1448	2026	2748.4	35.7	39.9
Imports	7726.6	8452.8	8257.3	-2.3	9.4
Net Services	385.9	456.6	691.4	51.4	18.3
Travel	207.9	224.1	575.2	156.7	7.8
Transportation	223.1	241.3	322.7	33.7	8.2
Government (n.i.e.)	160.4	225.2	247.5	9.9	40.4
Investment income	-34.6	-55.2	-69.6	26.1	59.5
Interest	-10.3	-28.3	-41.5	46.6	174.8
Dividend	-24.3	-26.9	-28.1	4.5	10.7
Other Services	-170.9	-178.8	-386.4	116.1	4.6
Private Transfers	2706.8	2709.7	3161.5	16.7	0.1
<i>Current Account Balance(excl. public transfers)</i>	-3185.9	-3260.5	-1656	-49.2	2.3
Public Transfers	1551.4	1905.6	1890.4	-0.8	22.8
<i>Current Account Balance(incl. public transfers)</i>	-1634.2	-1354.5	234.4	-117.3	-17.1
Non-monetary Capital	1664.9	1996.5	2474.6	23.9	19.9
Long-term (net)	739.2	1043.7	1388.1	33.0	41.2
Disbursements	781.3	1118.1	1538.9	37.6	43.1
Repayments	59	74.5	151.5	103.4	26.3
Cash	42.3	64.7	143.7	122.1	53.0
Arrears	0	0	0		
Relief	16.9	9.8	7.8	-20.4	-42.0
Direct Investment (net)	893.7	960.2	1242.5	29.4	7.4
Short-term (net)	32	-3.8	-156.5		
Net Errors & Omissions	524.6	-362.9	-1274.4	251.2	-169.2
Overall Balance	555.3	279	1434.6	414.2	-49.8
Financing	-555.3	-279	-1434.6		
Reserves (increase)	-494.6	-304.6	-1358.9		
NBE net foreign asset	-558.7	57.8	-915.3		
CBs net foreign asset	63.9	-362.4	-443.6		
Arrears	0	0	0		
Debt Relief	-2.4	-2.2	8.4		

Source: National Bank of Ethiopia

The private transfer contributed significantly to the positive balance of payments. Net receipts in the form of private transfer increased to outweigh export earnings. In the review period, private transfers grew by 16 percent. The country received USD 3.1 billion which is 14 percent in excess of export earnings.

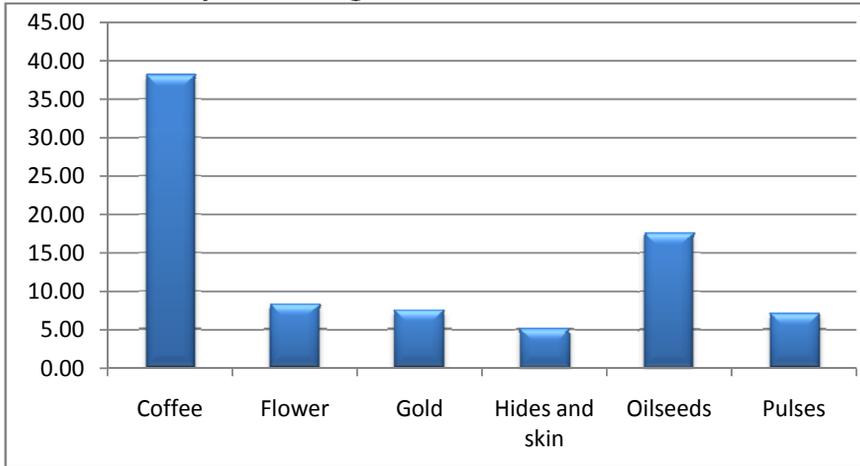
The capital account grew by 23.9 percent in 2010/11. This is a result of an increase in both the long term loan disbursement (33 percent growth) and foreign direct investment (29 percent growth). The positive balances of the current account (USD 234.4 million) and the capital account (USD 2.5 billion) resulted in a USD 1.4 billion increase in reserves, net of errors and omissions valued at USD 1.3 billion. The presence of such big errors and omissions undermines the reliability of the BOP data.

1.5.1 Exports

According to Ethiopian Revenue and Customs Authority, the total value of export in 2010/11 was USD 2.7 billion. This represents a 36 percent increase compared to the value in 2009/10.

Coffee still dominates the export earnings of the country with 30 percent share in the total value. Ethiopia's coffee export grew by 55 percent in 2010/11. Germany remains to be the biggest importer of Ethiopian coffee taking up 29 percent of total coffee exports. Germany is followed by Saudi Arabia importing 22 percent of the total coffee exports of Ethiopia. The price of coffee has shown much volatility in the international markets since the global financial and economic crisis. In the year under review coffee prices have recovered over 2009/10. Global composite coffee price increased from an average of US cents 123 per pound in 2009/10 to US cents 193 per pound in 2010/11.

Figure 1.10: Share of Major Export Commodities in total Value of Export Earnings in 2010/11



Source: Ethiopian Revenue and Customs Authority

Coffee is followed by oilseeds export which took 16 percent in the total share of export earnings. China is the major destination for Ethiopian oilseeds exports accounting for more than 63 percent of the total oilseeds export. The export of oilseeds to China has increased over recent years from 30 percent in 2005 to 63 percent in 2011. The international prices of oilseeds have increased in 2010/11.

Flower exports follows whose value accounting for 8 percent of the total export earnings of the nation. Flower exports are destined almost entirely to the Netherlands where there is a central market for flowers.

Pulses are the other major exports with 7 percent share in total export earnings. Pulses are exported mainly to the Sudan which takes 22 percent of the exports followed by United Arab Emirates with 10 percent share. Pakistan

and the Netherlands follow with 10 percent and 8 percent share in total pulses exports, respectively.

Gold is another major export of the country accounting for 7.5 percent in exports. Gold exports are mainly destined to Switzerland.

1.5.2 Imports

For the first time in years the value of imports recorded a decline of 2.3 percent. During the PASDEP period the average annual growth in imports was 18 percent. One reason for the decline is the devaluation of the Birr that took place in September 2010. This is coupled with the constrained loan availability for trade activities observed in the financial sector. In addition to this, because the year 2010/11 was the first year of the launching of GTP, most public projects might have not required significant imports of capital goods. However, this is expected to change in the years to come with the full scale operation of the GTP.

With the exception of fuel and semi-finished goods all the components of imports have declined in the year under consideration. Capital goods import has declined by 4 percent while consumer goods import declined by 8.8 percent. Raw material import has declined by 13.5 percent.

Table 1.7: Value of End Use Imports in Millions of USD

Categories	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Growth (2010/11)
	1998	1999	2000	2001	2002	2003	2003
Raw Materials	77.2	148.6	257.8	354.2	212.4	183.7	-13.5
Semi-finished Goods	821.6	800.3	1,259.7	1,140.1	1,226.5	1,228.0	0.1
Chemicals	115.0	98.9	114.7	117.7	114.8	130.1	13.3
Fertilizers	135.9	140.0	302.1	270.7	249.4	342.4	37.3
Textile Materials	38.3	13.2	27.3	19.3	23.5	29.2	24.0
Others	532.4	548.1	815.6	732.4	838.7	726.3	-13.4
Fuel	860.4	875.1	1,621.4	1,256.6	1,310.7	1,659.3	26.6
Crude petroleum	0.0	0.0	0.0	0.0	0.0	0.0	203.5
Petroleum Products*	856.5	872.3	1,614.4	1,246.9	1,303.0	1,648.8	26.5
Others	4.0	2.7	7.0	9.7	7.7	10.5	36.9

Categories	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Growth (2010/11)
	1998	1999	2000	2001	2002	2003	2003
Capital Goods	1,453.1	1,868.5	1,907.7	2,474.4	2,886.3	2,757.0	-4.5
Transport	429.9	633.8	380.9	384.2	509.8	688.1	35.0
Tyres for Heavy Vehicles	48.9	54.5	62.0	81.1	102.0	85.6	-16.0
Heavy Road Motor Vehicles	312.3	488.1	297.2	289.6	403.6	575.1	42.5
Aircraft	67.5	37.7	12.3	3.3	0.8	24.7	2,810.7
Others	1.2	53.6	9.5	10.3	3.4	2.6	-25.0
Agricultural	38.7	33.0	40.9	31.3	59.8	63.6	6.4
Industrial	984.4	1,201.7	1,485.8	2,058.9	2,316.7	2,005.4	-13.4
Consumer Goods	1,281.9	1,317.0	1,532.3	2,383.5	2,515.7	2,294.8	-8.8
Durables	415.7	520.7	476.0	674.8	865.0	868.5	0.4
Radio & T.V.	56.6	56.2	35.3	12.8	12.5	16.9	35.0
Tyres for cars & Other Vehicles	15.1	19.2	22.6	27.3	40.4	35.0	-13.3
Cars & Other Vehicles	141.9	174.3	138.7	158.3	215.8	218.2	1.1

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Categories	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Growth (2010/11)
	1998	1999	2000	2001	2002	2003	2003
Others	202.1	270.9	279.5	476.5	596.4	598.5	0.3
Non-durables	866.2	796.3	1,056.3	1,708.7	1,650.7	1,426.3	-13.6
Cereals	195.1	160.5	207.7	635.1	513.1	196.0	-61.8
Other Food	137.6	97.9	154.4	194.8	211.3	249.5	18.1
Medical & Pharmaceuticals	148.1	171.3	211.8	279.4	321.8	331.6	3.0
Textile Fabrics	204.6	191.1	208.2	193.1	230.2	237.1	3.0
Others	180.8	175.5	274.1	406.3	374.3	412.1	10.1
Miscellaneous	98.5	116.6	231.8	117.7	117.3	130.5	11.3
Total Imports	4,592.8	5,126.2	6,810.7	7,726.6	8,452.8	8,257.3	-2.3

Source: National Bank of Ethiopia

There are some notable developments with regard to the details in each sub-component. Imports of transport related capital goods has increased by 35 percent. Among these, aircraft import increased significantly. Normally, aircraft imports are not regular purchases. Heavy road motor vehicles increased by 42 percent. Industrial imports including machinery constitute the biggest sub component accounting for 72 percent of total capital goods imports. Industrial imports declined by 13 percent in 2010/11.

Among consumer imports, non-durables take the lion's share of imports. It constitutes 62 percent of the total consumer goods import. In 2010/11 it declined by 13.6 percent compared to the previous year. On the other hand, durable consumer goods import has increased slightly by 0.4 percent. Cars and vehicles import in the consumer goods category has increased by 1.1 percent during the year under consideration. Among non-durables, imports of cereals declined by 61 percent during the period.

I.6 Fiscal Developments

The government managed to maintain budget deficit at 5 percent of GDP through increased amount of external borrowing and more tax collection efforts. The GTP fiscal target is to keep inflation in single digits and increasing expenditure on pro-poor sectors. The actual fiscal performance shows that real recurrent expenditure has declined while real capital expenditure has increased. Social sector expenditure in particular on education dominated the recurrent expenditure while economic services dominated capital expenditure. About 74 percent of the total expenditure was covered by revenue. Revenues and grants financed 91 percent of the total government expenditure. Tax revenue during the period increased by 36 percent.

Fiscal deficit (including grants) as a ratio of real GDP reached 5 percent in 2010/11. The average deficit as a ratio of real GDP since 200/01 was 5.3 percent. Nominal values of both revenue and expenditure grew by 29 percent for the year. In addition to this, there was a marked increase in the amount of external borrowing in 2010/11 which helped to finance a bulk of the deficit.

The GTP fiscal target is to maintain a deficit that is in line with keeping inflation in single digits. In addition to this the fiscal policy direction is to increase public spending in pro-poor sectors like education, health, agriculture, natural resource and roads. These expenditures were expected to be financed by resources secured from domestic revenue mobilization rather than borrowing. This target was set to relieve inflationary pressures. Unfortunately, the inflation was not tamed. The high level of inflation rate was strong enough to erode the impact of the public outlays. Even though the government expenditure grew significantly in nominal terms, its real value (adjusted for inflation) grew only by 1 percent. The average growth rate in real government expenditure during the PASDEP period was 6 percent per annum. The adverse impact of the inflation on the effectiveness of government expenditure can be seen in the pro-poor projects. Pro-poor expenditure in 2010/11 has grown by 26 percent in nominal terms. However, the real impact has been compromised as the expenditure on pro-poor projects declined by 1 percent after adjustment is made for inflation.

Current and capital expenditures grew by 24 percent and 33 percent, respectively in nominal terms. This appears to witness the continued commitment by the government to focus on capital expenditure and spend less on current expenditure. Capital expenditure experienced a real growth even when deflated with CPI. It grew by 4 percent in real terms while current expenditure declined by 3 percent in real terms. The following table summarizes the developments in the fiscal sector in nominal terms.

Table I.8: Summary of Government Finance in Nominal Terms (millions of Birr)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
<i>Total Revenue and Grants</i>	20147	23262	29381	39705	54637	66240	85611
Revenue	15582	19530	21797	29794	40184	53864	69120
Tax revenue (inc measures)	12398	14159	17354	23801	29007	43318	58981
Direct taxes	3930	4461	5168	7015	9868	14906	19550
Indirect taxes	8468	9698	12186	16785	19139	28412	39431
Domestic indirect taxes	2721	3111	3997	5092	7325	10727	15705
Import duties & taxes	5746	6587	8189	11693	11814	17685	23726
Export taxes	0	0	0	0	0	0	0
Non-tax revenue	3184	5371	4444	5993	11176	10546	10139
Grants	4565	3732	7583	9911	14454	12376	16491
Grants in kind/earmarked	2234	2782	3492	4434	4858	5561	6859
CPF/ DBS grant	2331	950	4091	5477	9595	6816	9633
<i>Expenditure</i>	24994	29425	35607	46915	57774	72598	93831
Current expenditure	13438	15334	17165	22794	27176	32537	40535
Defense	2920	3009	3005	3453	4000	4000	4750

Table I.8 cont'd...

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
<i>Poverty-targeted expenditure</i>	4968	6493	7795	10627	12629	14996	18995
Interest payments	1011	1054	1207	1133	1286	1587	1913
Capital expenditure	11332	14042	18398	24121	30599	40061	53297
Central Treasury	8365	10785	13832	18277	22713	30685	38340
External assistance *	1513	2196	3081	4034	4518	4930	6521
External loans	1454	1061	1484	1810	3368	4446	8436
Overall balance including grants (excl.	-4623	-6114	-6182	-7210	-3137	-6358	-8220
Overall balance excluding grants (excl.	-9188	-9846	-13766	-17121	-17591	-18734	-24712
Overall balance including grants (excl.	-4119	-5237	-5169	-6222	-2956	-6214	-8088
Overall balance excluding grants (excl.	-8684	-8969	-12753	-16133	-17410	-18590	-24579
Overall balance including grants	-4847	-6163	-6227	-7210	-3137	-6358	-8220
Overall balance excluding grants	-9412	-9895	-13810	-17121	-17591	-18734	-24712
Financing	4847	6163	6227	7210	3137	6358	8220
External (net)	2384	1512	1913	2396	3176	4131	7798
Domestic (net)	3492	2735	6246	6580	-417	1758	111
Privatization	10	0	0	1008	472	697	1458
Other and residual	-1039	1916	-1932	-2775	-95	-228	-1146

Source: Ministry of Finance and Economic Development

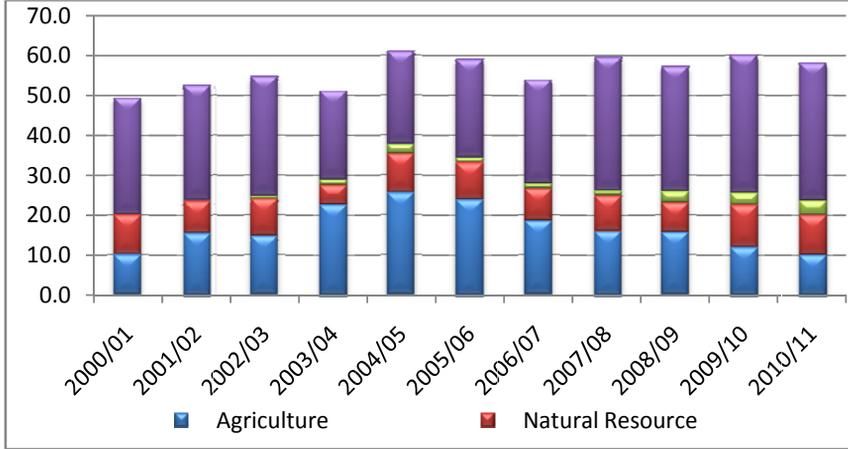
Social services expenditure dominates the recurrent expenditure with education taking the lion's share (30 percent of total recurrent expenditure). Recurrent expenditure in the education sector increased by 26 percent in 2010/11 in nominal terms. Compared to an annual average growth rate of 27 percent during the PASDEP period it has shown a slight decline. The health sector had a 7 percent share in the total recurrent expenditure and 18 percent of the recurrent expenditure for the social services sector.

Another major component in the recurrent expenditure is the general services category that includes defense, justice, public order and security and other services. The recurrent expenditure in these sectors took up 38 percent of the total recurrent expenditure.

Expenditure on economic services dominates the capital expenditure taking up 66 percent of the total expenditure. Its share was even higher during the PASDEP period as it stood at 70.8 percent. The government had continued its commitment to increase spending on infrastructure especially road construction. Road construction took more than 34 percent of total capital expenditure. Total payments on road construction reached Birr 18.3 billion.

Agriculture had a 10 percent share in the total capital expenditure. Compared to the trend in the PASDEP period, the share of expenditure in road construction has increased from 30 to 34 percent while that of agriculture declined from 17 to 10 percent in the year under review.

Figure I.11: Share of Economic Service in total Capital Expenditure



Source: Ministry of Finance and Economic Development

The education sector enjoyed a 20 percent share in total capital expenditure, and 74 percent in the capital expenditure allotted for the social sector. The capital expenditure on the education sector increased by 47 percent in nominal terms and by 15 percent after adjusted for inflation.

A significant development in the public finance in the years 2009/10 and 2010/11 is the increase in the ability of financing expenditures from domestic sources. In both years, total revenue from domestic sources covered 74 percent of the total government expenditures. The PASDEP average for this rate of financing was 66 percent. In the fiscal year 2010/11, all recurrent expenditures and 30 percent of the capital expenditures were covered by revenue from domestic sources.

About 91 percent of the total expenditure was covered through revenue and grants while the rest was financed through loans. Total revenue and grants grew by 29 percent in nominal terms during the review year. It showed a 2

percentage point increase in rate of expansion over the average rate of growth during the PASDEP period. This came from a significant growth in tax revenue, which grew by 36 percent in 2010/11. This might be thought of being a significant increase from the 29 percent average annual growth rate in the PASDEP period. However, these nominal values should be considered with caution as receipts of tax revenue increases with soaring prices.

The government embarked upon the task of improving the tax system. Because of this effort, the past two years witnessed improvements in the tax system and collection. This improvement along with increase in prices resulted in high growth of nominal tax revenue. Taking out the impact of prices from the nominal tax revenue, it has grown by 7 percent in real terms.

Within the tax revenue, the biggest sub-component is import duties and taxes. Revenue collection from this sub-component accounted for 34 percent of the total revenue. Even though imports declined during the review year, the taxes collected from the sector still outweigh collections from any other item. Collections in import duties and taxes grew by 5 percent in real terms. The share of domestic indirect taxes in the total revenue (excluding grants) increased from 16 percent in 2005/06 to 22.7 percent in 2010/11.

Total non-tax revenue accounted for only 11 percent of total revenue and grants and grew by 33 percent in nominal values. Residual surplus, capital charges, state dividend and interest payments account close to half of the non-tax revenue followed by sales of goods and services. This category of revenues depend much on the investments of the government in local enterprises, profits of government parastatals like Ethiopian Telecommunications Corporation, Ethiopian Airlines, Ethiopian Electric Power Corporation.

Grants covered around 19 percent of the total revenue and grants. Of this about 41 percent is aid in kind while the other 58 percent was in cash. In 2005/06 the proportion of in kind grants was 75 percent while that of cash grants was 25 percent. This was probably because the direct cash budgetary support during that period had declined due to the unrest of the 2005 elections. Since then the proportion of cash grant has increased.

Chapter Two

Performance of the Agriculture Sector

2.1 Introduction

This chapter provides an update on the performance of the agricultural sector. It is based on the official data mainly collected from CSA reports. The focus here is the early GTP period (2010/11) though data during other years are also analysed where necessary.

Based on the successes and lessons from the PASDEP period (2004/5–2009/10), the government has designed and is implementing a new, rather more ambitious development strategy known as the Growth and Transformation Program (GTP) for the 2010/11 to 2014/15 period. A key strategic direction during the GTP period is to ensure that smallholder agriculture becomes the main source of agricultural growth by scaling up interventions based on experience gained, and identification of successes achieved in the previous plan period. The results realized to date show that it is possible to transform subsistence agriculture to more market led production (MoFED, 2011).

The GTP identifies three strategic directions to make smallholder agriculture the main source of agricultural growth¹ and this includes scaling up of best practices witnessed during the PASDEP period, expansion of irrigation development and production of high value crops. Recognizing huge productivity gap between average farmers and best performers, the GTP aims

¹ For detail, see MoFED (2011).

to bring up the productivity of most average farmers closer to those of best farmers who currently harvest two to three times more production from same farmland. Similarly, the GTP promises a gradual shift from production of low to high value products for selected crops and livestock products (in agro-ecologically suitable areas). This envisages increasing income of farmers and pastoralists as well as hard currency for the economy through export to international markets.

During the GTP period, government envisage to raise food grain production by 40% from its level of 19,130 thousand tons in 2019/10 to 26,774 thousand tons in 2014/15. This is to be achieved in two ways: The first strategy is enhancement of land and labor productivity. Productivity enhancement emerges the principal objectives for increasing food production and security during the GTP period. Policy makers' promise to bring up the productivity of most average farmers closer to those of best farmers who currently harvest two to three times more production from same farmland (MoFED, 2010). Government promise to raise average food crops productivity by 30% from 17 qt./ha to 22 qt./ha at the end of the planning period in 2014/15, which implies an annual average target of 5% growth per annum. Given the current trend of average growth of 7% over the past five or six years (see Figure 2.1), this target is well below the achievement the country registered during the PASDEP period.

The second strategy of increasing the overall production is bringing more area of land under cultivation. During the planning period total agricultural land under crop production is envisaged to grow by about 14 per cent from 12.6 million hectares in 2009/10 (the base year) to 14.4 million hectares in 2014/05. Following the strategy to expand production of high value crops, the highest expansion is expected for industrial crops and fruits and vegetables. Industrial crops (such as cotton and sugar cane) which are produced on

463,000 hectares in 2009/10 are expected to expand by 150 percent to reach 115,000 hectares at the end of the planning period. Similarly, agricultural land covered by fruits and vegetables presumed to expand by 130 percent and reach 358,000 hectares in 2014/15. This is followed by spice and stimulant crops where the first expected to expand by 76% and reach 321,000 ha, and the later to grow by 56% over the coming five years. The lowest expansion is expected for food crops (grains and root crops).

The government plan shows agricultural land occupied by food grain crops to expand by about one million hectares and reach 12.2 million hectares at the end of the GTP period (in 2014/15), which shows a mere 9 percent growth over the five-year period, until 2014/15. When compared to the previous five year plan (PASDEP) period when agricultural land expanded by about 1.4 million hectares or by 14%, the GTP set a less ambitious target for agricultural land for production of grains among small farmers.

In view of the rapid growth of young population in rural areas, the size of uncultivated land and the high interest for new farm land as witnessed during the previous five years planning period (PASDEP period), the new target seem small and government should work to find ways to accommodate the greater demand for farm land in the smallholder sector. Over the PASDEP period (between 2004/05 and 2008/09), over 1.8 million new farmers (holders) were reported to enter into production of grain. On average, each of these new entrants got 0.78 hectare of farm land².

2.2 Grain Production and Food Security

Food grains production has continued with its positive and fast growth. Government statistics indicate that the country produced 20.4 million tons of

² These figures are computed based on data obtained from CSA (2005) and CSA (2009).

grains from 11.8 million hectare of cultivated land in 2010/11 (Figures 2.1). Over the past five years, grain production has been increased by more than 70%. Both expansion in cultivated land and improvement in land productivity have contributed for the increase. During the same period, land productivity and cultivated land increased by 42% and 21%, respectively, which shows the relative high contribution of productivity to the reported growth in production.

Though production and productivity in grain production has improved consistently over the past few years, the growth observed in 2010/11 (which is the first year of the GTP period), is exceptionally very high. Between 2007/08 and 2009/10, for instance, grain production, cultivated land and productivity grew annually on average by 9%, 3% and 5%, respectively. In 2010/11 alone, grain production grew by 19%, while cultivated land and productivity increased by 4% and 13% respectively (see Figures 2.1 and 2.2). In other words, in 2010/11 alone, the country has managed to boost its farm land, production and productivity of food grains by 0.3 million hectares, 2.3 million tons and 1.5 quintal, respectively.

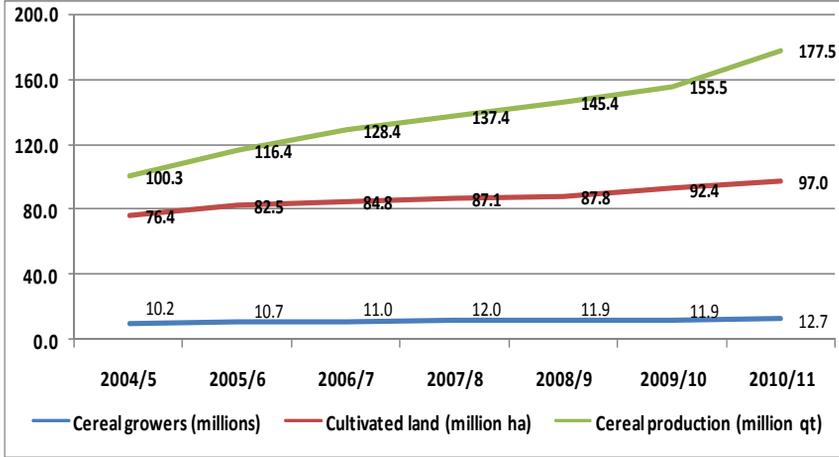
Grain production in 2010/11 also exceeds what government target for the year. In its GTP plan, the government indicated that 19.97 million tons of grain would be produced from 11.4 million hectares of cultivated land (MoFED, 2011b). Actual production and cultivated land, as reported by CSA, was 20.35 million quintals and 11.82 million hectares, which exceeds the target by 0.4 million. In terms of land productivity, actual performance is slightly lower than the GTP target for the year. While the target was to harvest about 17.5 quintals of grain per hectare of cultivated land, the reported performance was 17.2 quintal per hectare.

Improvements in total grain production have also contributed for food security status of both farmers and consumers. As shown in Figure 2.2, food grain production per capita and per farmer (producer) have been increased nearly by 50% over the past six years, implying per annum growth of eight percent. In 2010/11, grain production per capita and farmer reached 2.40 and 9.23 quintals, respectively. This indicates that the country has reached the minimum grain requirement that reported to ensure food security³.

Cereals take the largest share of the total grain production (with 88%), followed by pulses and oilseeds. During the 2010/11 meher season, nearly 1.3 million small farmers/holders were engaged in production of cereal crops on 9.7 million hectares of farm land. About 177.6 million quintals of cereals was harvested on these farmlands, which implies an average productivity of 18.3 qt/ha. At household level, on average, a farmer/holder cultivated 0.76 ha of farm land to produce 14 quintal of cereals. Compared to the preceding year (2009/10), aggregate output has increased by 22.3 million quintal or by 14 percent. Similarly, area cultivated grew by about 5%, which implies that improvement in productivity is the major factor behind the growth in production of cereal crops which are mainly produced for own consumption.

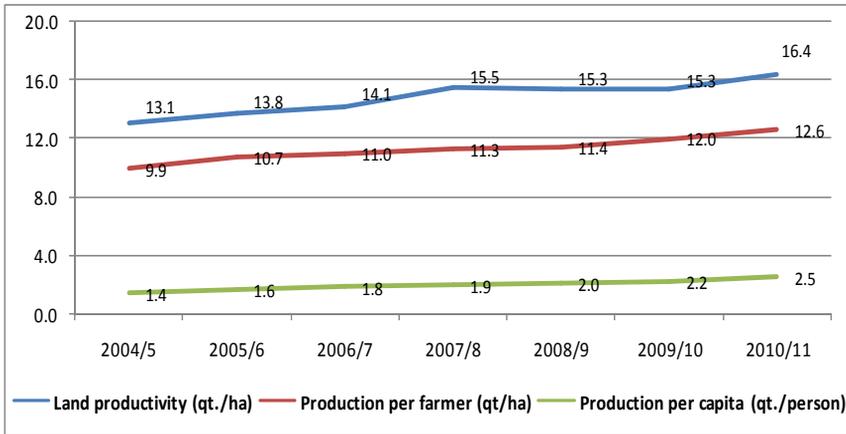
³ This assumes that grain produced used only for human consumption. This, however, is not the case, as grains produced could be used for seed and animal feed, in addition to wastage during post-harvesting seasons.

Figure 2.1: Trends in cultivated land, production and cereal producers over the past few years (during meher season)



Source: CSA Annual Agricultural Sample Surveys

Figure 2.2: Trends in cereals yield and productivity, meher season



Source: CSA Annual Agricultural Sample Surveys

As shown in Figure 2.2, land productivity rose by 9% in 2010/11 alone and by 40% over the previous five years. Cereal yield in Ethiopia is now well above the average of sub-Saharan Africa. Cereal producers in Ethiopia produced 1.8 quintals from a hectare of farm land which exceeds the average yield in Kenya and Uganda by 0.2 quintals (Access Capital Research, 2012). Similarly, production per farmer and per capita grew by 6.8% and 8.9%, respectively in 2010/11.

2.3 Production of Other Crops: Coffee, Chat, Vegetables and Fruits

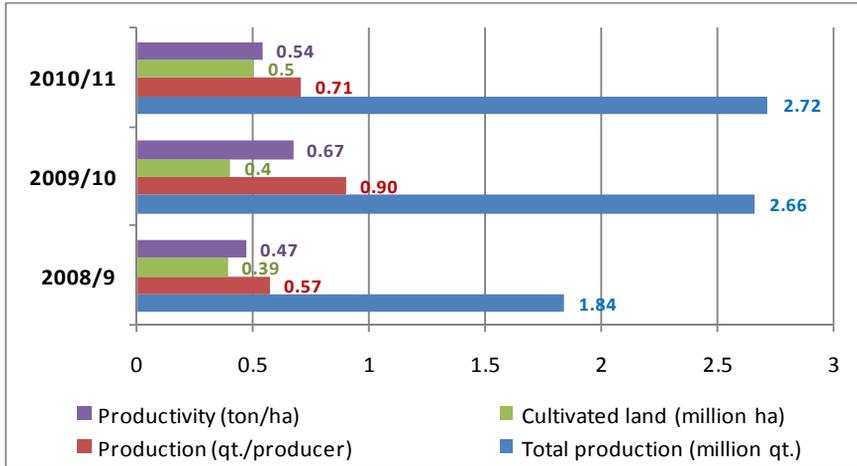
Apart from grains, small farmers produce a number of crops for market and/or home consumption. Considering their significance as cash crop and nutritional value, the study selected coffee, chat, vegetables and fruits for analysis.

2.3.1 Coffee Production

Coffee production has been consistently growing over the past few years. Within three years, production was increased by 48% and reaches 271,721 tons in 2010/11 (see Figure 2.3). During the same period, cultivated land by coffee grew by over 90%, implies that area expansion is the major factor behind the increase in production.

The number of small coffee growers has also increased over the past few years, Government statistics indicate that in 2010/11, 3.85 million small holders participated in coffee production. Out of this, about 1.2 million coffee growers were new who joined the sector during 2004/5-2010/11 period.

Figure 2.3: Coffee production in the past three years



Source: CSA Annual Agricultural Sample Surveys

While the increase in production and interest of small farmers for coffee is encouraging, the stagnant and widely fluctuating yield level should be a concern for relevant authorities. Coffee yield varies between 5 and 7 qt./ha over the past decade which is not high as compared to the average productivity in some neighboring countries like Uganda where average productivity (for coffee Arabica) is 7.5 qt/ha⁴.

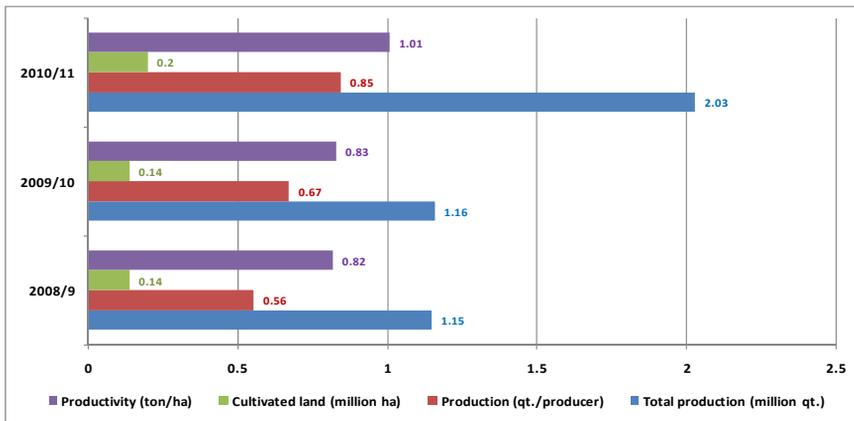
2.3.2 Chat (Khat) Production

Chat is a major cash crop for millions of small farmers as it is among the major foreign currency earner for the country. Ethiopia has doubled its production of chat over the past five years. In 2010/11, about 2.4 million small farmers produced 203,084 tons of chat on 204,649 hectare of land. The

⁴ See <http://www.ugandacoffee.org/index.php?page&a=15>

increased attractiveness of chat production is also manifested by the increase in the number of chat growers as well as in the quantity of chat production per grower. Over the past five years, the number of chat growers grew by 30%. The volume of production per chat farmer also grew by 60% during the same period and reached 85 kilogram in 2010/11 (see Figure 2.4).

Figure 2.4: Chat production in the past three years



Source: CSA Annual Agricultural Sample Surveys

2.3.2 Production of Vegetables and Fruits

Vegetables and fruits are important crops with high potential to transform subsistence agriculture to more market led production. For most Ethiopian smallholders, fruit and vegetable cultivation, however, is not the main activity. It is supplementary to the production of main crops and the cultivation is on a very small plot of land (at a subsistence level) and is managed by a household.

As a source of their livelihood, few business-oriented farmers and urban dwellers are beginning to cultivate small scale vegetables for domestic

consumption, especially in and around cities. This trend is increasing overtime and the activity is becoming income generating for farmers around and nearer urban areas, and increasingly in areas with irrigation potential. Vegetable suppliers and retailers are also increasingly linked to this type of activity in Addis Ababa and regional towns.

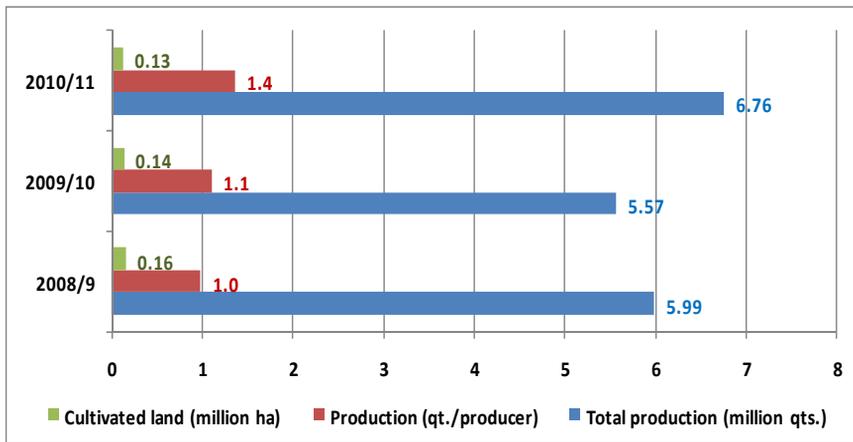
Substantial improvements have been observed in the production of fruits and vegetables in the past three years. Figure 2.5 shows that the total vegetable production increased by about 13% between 2008/9 and 2010/11. However, land under vegetables declined by 18% implying a significant productivity improvement in vegetable production during these years. Similarly, an 15% expansion in land and 57% growth in productivity were behind the growth in fruits production.

Following the trend in aggregate production, production at household level has also increased over the past three years. Vegetable and fruit producing households increased their production by 40% and 35%, respectively, over the past three years. Despite this positive trend, average production per producer never exceeds 1.4 quintals for vegetables and 1.7 quintals for fruits. This implies the low level of production/commercialization of these crops and their secondary role in the livelihood among the few producers. It is, therefore, essential for concerned authorities to encourage specialization and commercialization wherever markets and agro-ecologies are suitable for production of these crops.

The production potential of fruits and vegetables is not widely and evenly distributed across the various regions of the country. The cultivation is also seasonal and the supply is scanty and volatile even in areas where irrigation is possible. The production of tomato and onion which are relatively highly commercialised when compared to other vegetables like Ethiopian cabbage

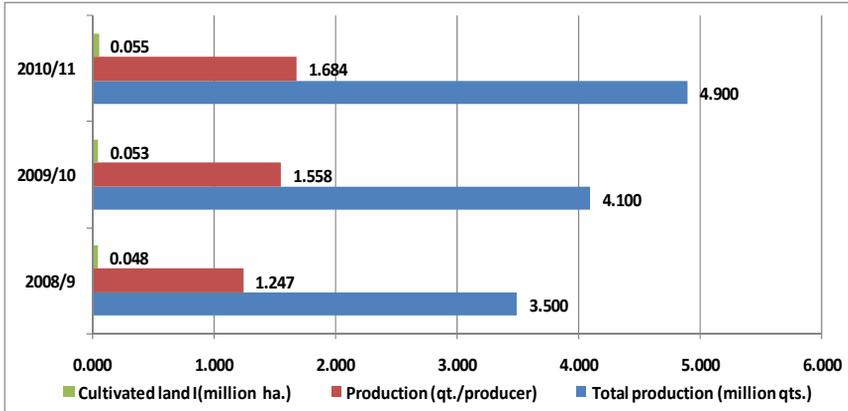
and increasingly produced by irrigation is limited to few regions. About 70% of tomato, for instance, is produced in Oromia region whereas the individual shares of other regions is not more than 10% (Figure 2.7). Similarly, Oromia takes the lion’s share in terms of onion production; but, in this case, it is closely followed by Amhara region (41%) (Figure 2.8). The separate contributions of the remaining regions are quite small. contribute quite small shares to the total production.

Figure 2.5: Vegetable production in the past three years



Source: CSA Annual Agricultural Sample Surveys

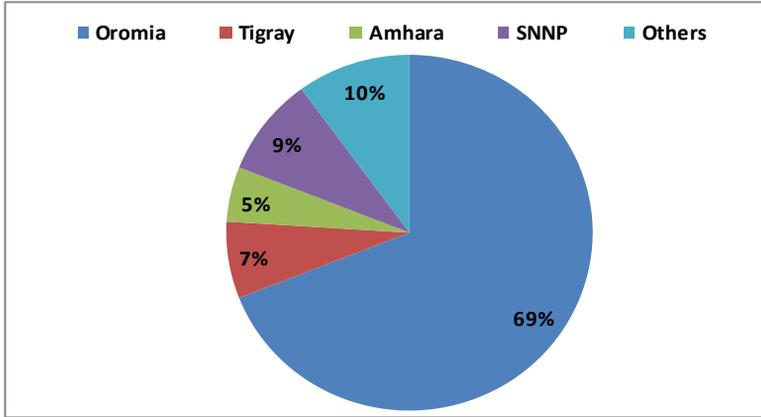
Figure 2.6: Fruits production in the past three years



Source: CSA Annual Agricultural Sample Surveys

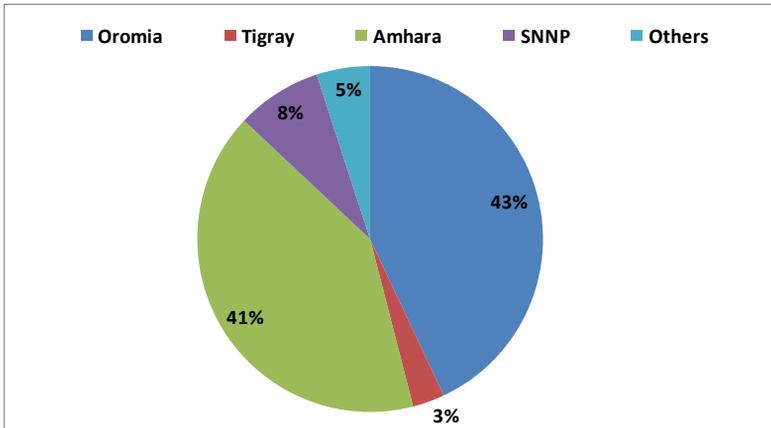
The high potential for vegetable and fruits production in many parts of the country calls for extra effort to improve the production and consumption of these important cash and food crops. Any interventions should target constraints both on the demand and supply side. The knowledge gap on fruit and vegetable production techniques and processing technologies is wide. Also, knowledge of domestic consumers of the benefits of fruits and vegetables is confined to very few varieties of fruits and vegetables. Hence domestic demand, with the exception of few widely known tropical fruits and vegetables, is generally small. These factors have adversely affected the growth and expansion of horticulture sub-sector in Ethiopia (Yilma, 2009).

Figure 2.7: Regional distribution in tomato production in 2010/11 in 2010/11 (N=55,635 ton)



Source: CSA Annual Agricultural Sample Surveys

Figure 2.8: Onion production by regions in 2010/11 (N=236,922 ton)



Source: CSA Annual Agricultural Sample Surveys

2.4 Livestock Production

Livestock plays an important role in Ethiopian agriculture. The 10 years policy and investment roadmap (2010/11 to 2019/20) (MOARD, 2010) shows that Ethiopia's agriculture is dominated by cereals (32% of AGDP) and livestock (33%) while export crops and other agriculture account for 17% and 18%, respectively.

2.4.1 Livestock Production and Marketing

2.4.1.1 Cattle Production and Marketing

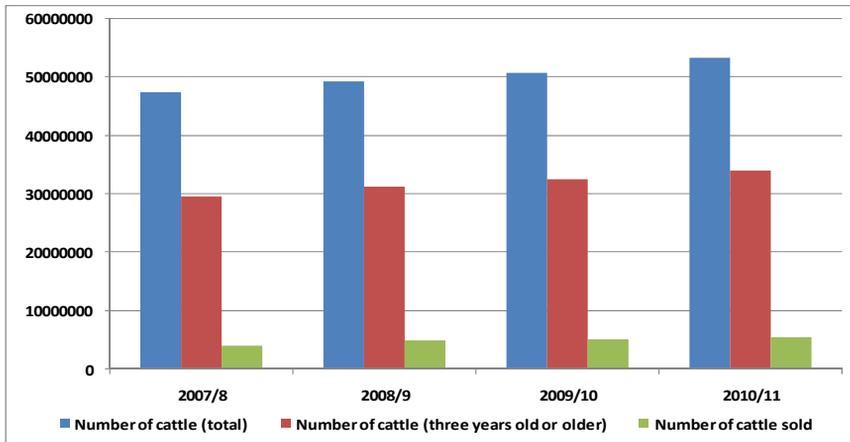
The estimate of cattle for the rural sedentary areas at country level is about 53.4 million in 2010/11 (CSA, 2011c). About 64% or 34 million of these are aged 3 years or above and play a number of economic roles in the livelihood of small farmer. Livestock is primarily kept on small-holdings where it provides draught power for crop production, manure for soil fertility and fuel, and serves as a source of family diet and source of cash income (from sale of livestock and livestock products) particularly when markets for crops are not favourable which shows livestock role as insurance. In the lowland pastoral and agro-pastoral production systems livestock are the principal source of subsistence providing milk and cash income to cover family expenses for food grains and other essential household requirements (mostly consumer goods)

In the highlands, cattle (particularly oxen) are used as a source of draught power. This practice has negative effects on the quality and quantity of cattle products (e.g. beef). CSA indicates that those used for draught purposes accounted for 25.29 percent and the percentage share of beef cattle⁵ is the lowest that is about 0.87 percent. The number of young animals sold from the

⁵ Beef cattle here refer to all cattle reared exclusively for meat that is used either for home consumption or for sale (CSA, 2011c).

highlands which are suitable for breeding or for further fattening is limited. The majority of the animals sold are old draught animals and barren cows (CSA, 2011c).

Figure 2.9: Estimated number of cattle owned and sold by farmers



Source: CSA Agricultural Sample Surveys

Over the past few years, the size of livestock produced and marketed by small farmers has increased. As shown in Figure 2.9, between 2007/8 and 2010/11, the total population of cattle and those aged 3 years and above increased annually by 12% and 14% respectively. Similarly, the number of cattle sold by small farmers grew by 37% and reaches 5.5 million at the end of 2010/11. The relatively high growth in the number of marketed cattle shows the increase in commercialisation of livestock production in a dominant mixed farming system where crop cultivation and livestock production are undertaken side-by-side complementing each other.

Apart from this relatively small but positive trend in beef production and the commercialisation of livestock production, the consumption of sufficient meat

is a rare extremity in Ethiopia. While developed and developing countries consumed a consistent level of 77kg and 25 kg, respectively, of meat per capita (Abbey, 2004), per capita consumption of meat in Ethiopia has never exceeded 8 kg (EEA, 2011). As reflected in the GTP, government has huge interest to develop the livestock sector. The livestock sector is expected to be promoted through expansion of livestock fattening and breed improvement as well as pasture development and animal health (MoFED, 2010).

2.4.1.2 Production of Other Livestock

Ethiopia is also rich in livestock other than cattle. Small ruminants, equines, camels and poultry are widely produced. According to CSA, close to 26 million sheep and 23 million goats are estimated to be found in the country (CSA 2011c). Almost all of the sheep and the goats are indigenous (99.92 percent and 99.98 percent, respectively). Donkeys constitute the overwhelming majority of draught equines with an estimated number of 6.2 million followed by horses (2 million) and mules (0.38 million mules). The estimated number of camels is 1.1 million in the sedentary areas of the country.

Poultry are widely produced in Ethiopia; almost every rural family owns chicken for consumption and sale (Tadelle et al. 2003a, see Fisseha et al, 2010). The total number of poultry (cocks, cockerels, pullets, laying hens, non-laying hens and chicks) is estimated to be about 49.3 million (CSA, 2011c). Most of the poultry are chicks (37.12 percent), followed by laying hens (32.25 percent). Pullets are estimated to be about 4.9 million in the country. Most small farmers keep a small flock of free-range chicken for household consumption, sale and reproduction purposes. Smallholder village chicken owners, found in different parts of the country, sell chicken and eggs

to purchase food items, to cover school fees, to get cash for grain milling services, to purchase improved seeds and to adjust flock size (Fisseha et al, 2010).

2.4.2 Livestock Products

2.4.2.1 Milk Production

Milk production has improved over the past three years. CSA estimates indicates that the country produced 4,058, 2,940 and 2,765 million liters of cow milk in 2010/11, 2009/10, and 2008/9, respectively⁶ (CSA, 2011c). In terms of per capita, these production figures can be translated into 48, 36 and 34 liters per person for the respective three years⁷ (see Figure 2.10). The figures show that per capita milk production has grown by about 41% over the past three years. There is no doubt that this is an impressive growth, but it is difficult to fit it with the corresponding high hike in milk price during the same period⁸.

CSA data also indicates a high progress in milk yield. In 2008/09, a milking cow produces on average about 1.3 liter per day over its estimated six month lactation period. In 2010/11, this yield rose to 1.9 liter, indicating a growth of 46% (Figure 2.10). In other words, milk production has increased from 234 liters per cow per annum in 2008/09 to 342 liters per cow per annum in 2010/11.

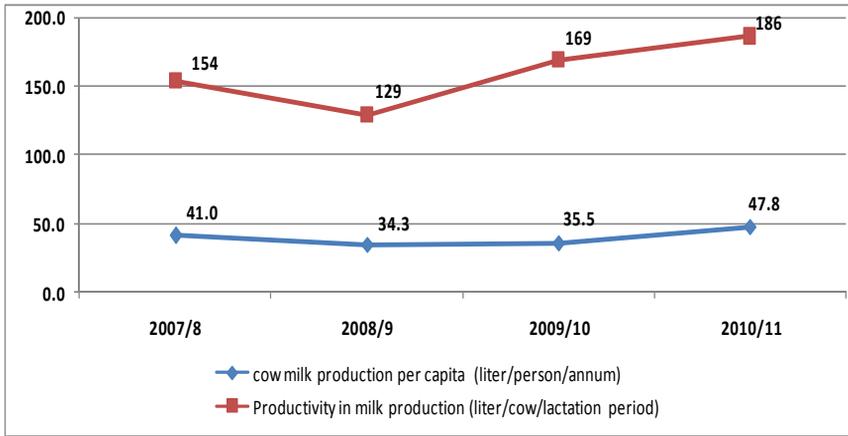
⁶ For detail, please see CSA's annual agricultural sample survey reports on livestock and livestock characteristic.

⁷ Population number used for estimating per capita production for 2010/11, 2009/10 and 2008/9 are 84.8 million, 82.8 million and 80.7 million, respectively.

⁸ During the same period retail price for pasteurized milk rose by about 30% from 6 Birr per liter to 7.78 Birr in Oromia and from 6.94 Birr to 8.85 Birr in Addis Ababa (CSA, 2011c)

Despite this high growth, milk production per cow per year is low in Ethiopia as compared to the neighboring countries. For instance, Nngigi (2004) reported that, the average milk production per cow per annum was 507 in Kenya in 1998 while it was about 350 liters in Uganda in the same year. This difference is due to poor livestock management (including poor veterinary services and lack of feed) and low productivity of local breeds.

Figure 2.10: Milk production and productivity



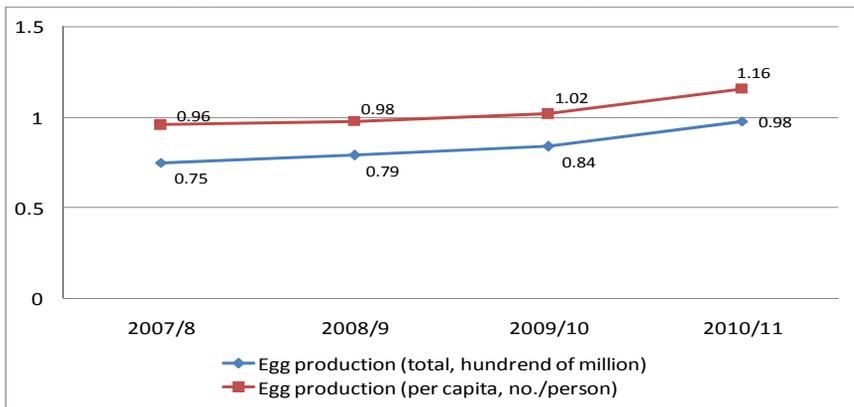
Source: CSA Agricultural Sample Surveys

2.4.2.2 Egg production

One of the major purposes for keeping chickens is egg production. Recent data show that production of egg has been increasing over the past few years. As shown in Figure 2.11, estimated egg production reached over 98 million in 2010/11 which shows an annual average growth of 7 percent (between 2007/8 and 2010/11). Due to corresponding high population growth, the impact on per capita egg production is very low which indicates the need to strengthen support to the development of poultry production.

There are many other reasons for more, integrated support for the poultry sector. The smallholder poultry production considered as an income-yielding activity that fits well with the concept of small-scale agricultural development. Moreover, land, which is a critical production resource in rural Ethiopia, is not a limiting factor in the smallholder chicken production systems (Fisseha et al, 2010). Village chicken products are also the largest source of animal protein for resource-poor households. Eggs are a source of high-quality protein for sick and malnourished children under the age of five.

Figure 2.11: Egg production over the past few years



Source: CSA Agricultural Sample surveys

2.5 The Supply and Use of Improved Inputs

The use of improved agricultural technologies is crucial to boost agricultural production and productivity of small farmers. The government promises to strengthen the technology multiplication, supply and distribution system. The GTP document states that (in the coming five years) the required fertilizer, improved seeds and small farm machineries will be made available with the

requisite quality and quantity (MoFED, 2011a). The GTP target for agricultural and rural development shows that the supply of improved seeds will increase by six fold from its 0.56 million quintals in 2009/10 to 3.6 million quintals by the end of the planning year in 2014/15. Similarly, at the end of the GTP period, the application of DAP and Urea fertilizers is envisaged to reach to 1.66 million tons which envisages a 100% increase from the 2009/10 level (MoFED, 2011b)⁹.

2.5.1 Improved seeds

Improved seed distribution to farmers is regulated by the MoA and the actual distribution is undertaken by the Ethiopian Seed Enterprise and private seed companies. There are 26 private companies licensed to produce seed. The major ones for maize seed include Pioneer Hi-Breed Seeds Plc., Hawas Business, Awassa Green Wood, Hadiya Trading Enterprise, Ethio-Flora and Ano Agro-Industry. Moreover, national agricultural research has contributed to the development of appropriate crop varieties that match with farmers' needs and overcome various ecological constraints. Cooperative unions are also widely engaged in the production of improved seed of various crops, with the support of the government, European Union, NGOs, and other donors.

The usage of improved seeds is one of the most efficient ways of raising crop production and productivity of small farmers. However, its use in Ethiopia is very low and remains less than 15 percent of all crops grown (FAO/WFP, 2010). For instance, only 16% of farmers reported for their use of improved seeds in 2010/11. What is worse is that these farmers used improved seeds only on part of their cultivated farmland. CSA report indicates that improved

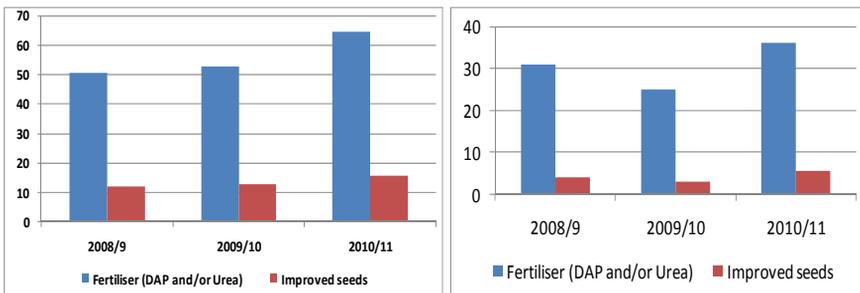
⁹ CSA report shows different statistics for the supply of improved seeds and fertilizers in the base year, 2009/10. Though CSA report did not include data on large-scale private or state farms, the supply of improved seeds and fertilizer was only 4.2 and 0.24 million quintals, respectively, in 2009/10.

seeds sowed only on about 6% of area cultivated by grain crops in 2010/11 (Figure 2.13). Similarly, the number of farmers who applied improved seeds in 2010/11 was only about 15% (Figure 2.12).

This is partly due to the inability of the various suppliers to meet the demand. Moreover, most farmers prefer to use recycled seeds which have low yields as they lack financial capital and credit to purchase improved seeds and associated inputs (mainly fertilizer). This has contributed to the low growth in yields of most staple food crops (FAO/WFP, 2010).

Figure 2.12: Farmers applied improved seeds and chemical fertilisers (% of all farmers)

Figure 2.13: Cultivated land treated by chemical fertilisers and sown by improved seeds (% of cultivated land)



The use of improved seeds is limited to a few crops such as maize and wheat (Figure 2.14). Maize and wheat together make up 87% of the seed market. The share of Teff was only 4%, and pulses and other cereal crops accounted for the remaining 9% of the supply. In terms of the total area planted with improved seeds, maize is by far the dominant crop. It takes about three-quarters of the total area planted with improved seeds. Perhaps this is due to the small seeding rate in maize which might compromise the impact of the

seed on yield¹⁰. The next important crop in regard is wheat which accounts for nearly one-quarter of the total area sown with improved seeds.

Figure 2.14: Percentage share of different crops seeds (as percent of total cultivated land sown by improved seeds)

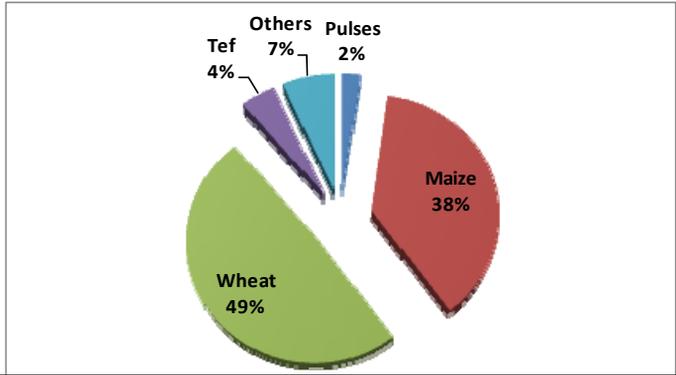
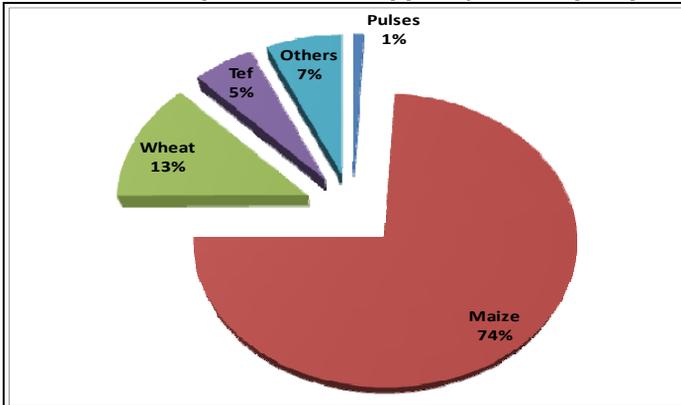


Figure 2.15: Percentage share of cultivated land (as percent of total improved seeds applied) sown by improved



¹⁰ The low planting rate of maize (on average about 26 kg/ha) and the high application rate for wheat (190 kg/ha) reverse the respective share of these crops in total plating area sown by improved seeds.

2.5.2 Chemical Fertilisers

Over the past three years, the supply and use of chemical fertilisers increased. In 2010/11, about 65% of small farmers reported for their use of chemical fertilizers, which indicates a 14% growth when compared to the level reported in 2008/9 crop year (Figures 2.16 & 2.17). During the same period (between 2008/9 and 2010/11), the proportion of area under fertilisers has also increased but at far slower rate. Cultivated land treated by chemical fertilisers grew only by 5% to reach 36% of total cultivated land by different grain crops.

As shown in Figure 2.16, almost 90 percent of all chemical fertilizers are applied to cereal crops, with teff receiving about 29 percent, wheat and maize about 24 percent each, barley 6 percent and pulses about 3 percent.

Figure 2.16: Fertilizer use among different crops (as percent of total fertiliser applied)

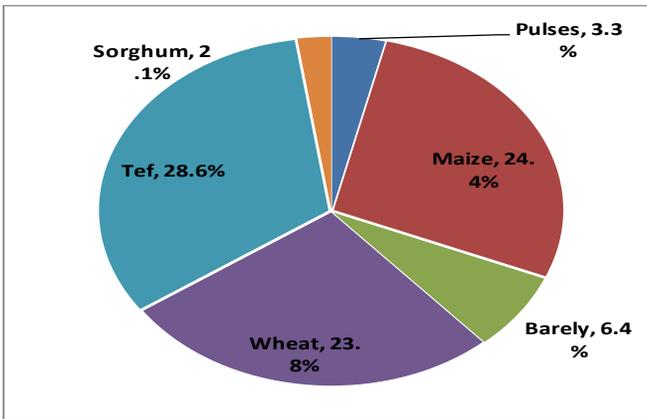
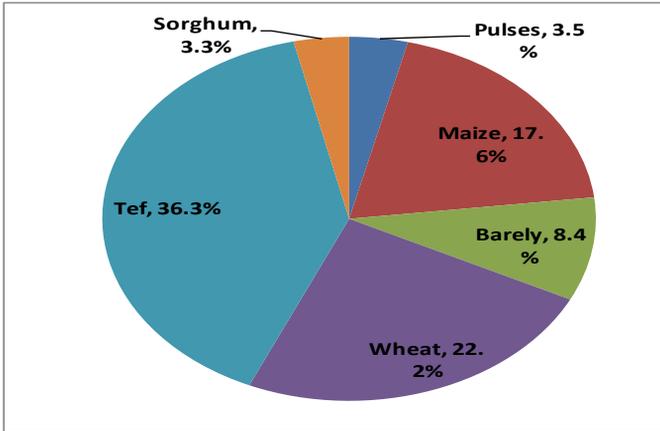
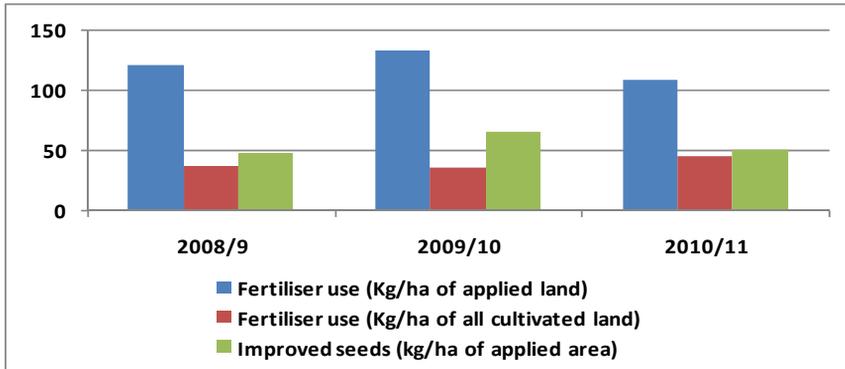


Figure 2.17: Cultivated land under fertilizer (as percent of total cultivated land under fertiliser)



Until the early 1990, the application of chemical fertilisers was very low. However, it grew rapidly since then. Between 1991 and 1995, fertilizer use and intensity, for instance, rose dramatically from 110,000 metric tons (21 kg/ha) to 300,000 metric tons (35 kg/ha) in 1999, levels that compare favorably with many countries in Africa (World Bank, 2006, cited by Daniel and Donald, 2010). Nevertheless, in subsequent years, fertilizer consumption and intensification fluctuated considerably and intensification has only recently resumed a steady and fast upward trend (Daniel and Donald, 2010). After a decade, Ethiopia manages to increase supply by about fivefold and the application rate by triple to 520,000 metric tons and 133 kg/ha (CSA (2011d)). This is significant improvement. However, a lot remains to do. First, still only one third of cultivated land gets chemical fertilizers and in most cases, fertilizers are applied in isolation from improved seeds. It is also important to note that supply of organic fertilizer and the scope for increased fallowing are limited in Ethiopia, any significant growth in fertilizer use will depend on an increase in the application of chemical fertilizers

Figure 2.18: Application rate of chemical fertilizers and improved seeds

Despite some ongoing effort to construct fertilizer factories in the coming five years, Ethiopia totally depends on imports to meet its annual fertilizer demand. The parastatal Agricultural Input Supply Enterprise (AISE) played the role of procuring entity, while cooperative unions were as usual in charge of the domestic distribution.

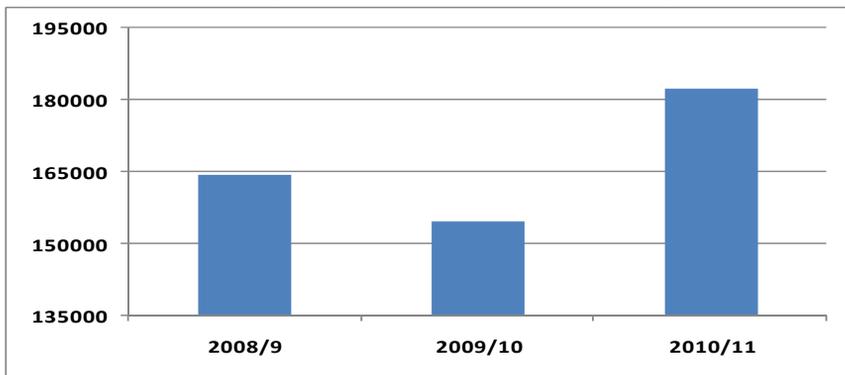
The foreign exchange needed for fertilizer importation is financed through loans, donor assistance (grants) and the Government treasury. Hence, precision in planning and fine-tuning of marketing activities are necessary to ensure timely imports and supplies. The fertilizer sector has been deregulated and opened for private competition since the mid 1990s. Following the issuance of the fertilizer policy, the pan-territorial fertilizer pricing system was eliminated and subsidies were removed. However, aware of the strategic role of the fertilizer sector in achieving self-sufficiency and in alleviating poverty, the Government of Ethiopia is still involved in the sector by making credit available to farmers and by encouraging more fertilizer use. New Government import guidelines have been recently issued in order to facilitate access to credit (especially on collateral requirements) and increase the number of private importers ((FAO/WFP, 2010).

2.6 Small-scale Irrigation

Small-scale irrigation is an important focus area for the government in the coming five years. As indicated in the GTP document, the government envisages expanding from 853 million hectares to 1,850 million hectares (MoFED, 2011b). Official estimates on the size of land under small-scale irrigation, however, contradict each other. The GTP document shows that land developed under small-scale irrigation was 853 million ha in 2009/10 (MoFED, 2011b). However, CSA estimates on cultivated land under irrigation reduce the figure to only 182 thousands hectare, which represents only 1.3% of the total cultivated land (see CSA, 2011d and MoFED, 2011a).

Progress made in terms of small-scale irrigation development is also small. Between 2008/9 and 2009/10, cultivated land under irrigation increased only by about 11% annually and reached 182 million ha in 2010/11 (Figure 2.21). But government envisages to double area under small-scale irrigation within the next five years.

Figure 2.19: Total irrigated land over the past three years (ha)



Source: CAS (2011d)

2.7 Pastoral Development

Ethiopia is home for more than 12-15 million pastoralists who reside in 61% of the nation's landmass. Pastoral areas are estimated to comprise 42% of the national total livestock population. Moreover, pastoral areas are rich in biodiversities, mineral and water resources as well as energy resources, and untapped tourist attractions. The major problems in pastoral areas include lack of appropriate livestock marketing, education, public health, veterinary services, water both for human and for livestock and rural finance are the least developed (PFE, 2002).

Government development plans for pastoral areas recognise the aforementioned constraints and plan to address them. According to the growth and transformation plan, government focus for development in pastoral areas focused on livestock, water and pasture (MoFED, 2011). In view of agricultural development, primary emphasis will be given for water resources development that will be used both for livestock and human consumption. This task will be accomplished together with improvement of pasture land and irrigation schemes development. Efforts will be made to expand and adapt the successful experience of irrigation projects in Fentalie and Borana areas to other pastoral areas in Somali, Afar and SNNP Regional States (MoFED, 2011).

2.8 Summary and Conclusion

This chapter offers an update on the performance of the agricultural sector. The analysis focused on the performance of the smallholder sector over the past few years with special emphasis to the past agricultural year which coincide with the first year of the GTP.

Government statistics indicate the continued positive and fast growth in production of food and non-food crops. The performance of the sector in 2010/11, however, was exceptionally high. Between 2007/08 and 2009/10, for instance, grain production, cultivated land and productivity grew annually on average by 9%, 3% and 5%, respectively. In 2010/11 alone, grain production grew by 19%, while cultivated land and productivity increased by 4% and 13% respectively. In other words, in 2010/11 alone, the country has managed to boost its farm land, production and productivity of food grains by 0.3 million hectares, 2.3 million tons and 1.5 quintal, respectively. Grain production in 2010/11 also exceeds slightly by 0.4 million quintals from what government target for the year.

Improvements in total grain production have also improved the national food security status. As discussed earlier, food grain production per capita and per farmer (producer) have been increased nearly by 50% over the past six years, implying per annum growth of eight percent. In 2010/11, grain production per capita and farmer reached 2.40 and 9.23 quintals, respectively, which indicate that the country has just reached the minimum grain requirement that supposed to ensure food security.

Similar trend was reported in production of other cash crops. Coffee production, for instance, was increased by 75% over the past five years and reaches 271,721 tons of coffee in 2010/11. During the same period, cultivated land by coffee grew by over 90%, implies that area expansion is the major factor behind the increase in production.

The positive performance of the agricultural sector is not exceptional to the crop sector. Official statistics indicate a commendable growth in production of livestock and livestock products over the past few years. Over the past few years, the size of livestock produced and marketed by small farmers has

increased. As shown in the report, between 2007/8 and 2010/11, the total population of cattle and those aged 3 years and above increased annually by 12% and 14% respectively. Similarly, the number of cattle sold by small farmers grew by 37% and reaches 5.5 million at the end of 2010/11¹¹. The relatively high growth in the number of marketed cattle shows the increase in commercialisation of livestock production in a dominant mixed farming system where crop cultivation and livestock production are undertaken side-by-side complementing each other.

Milk production has grown by about 40% over the past three years. Between 2008/9 and 2010/11, while total production grew by 47%, per capita production rose by 41%. During the same period (i.e. between 2008/9 and 2010/11), retail price for pasteurized milk rose by about 30% from 6 Birr per liter to 7.78 Birr in Oromia and from 6.94 Birr to 8.85 Birr in Addis Ababa. It is not easy to swallow or reconcile the parallel high but simultaneous growth in per capita milk production and its price¹².

The second five year development plan (The GTP) envisages an increase in the production of major crops to 39.5 million tons by the end of the plan year from the level of 18.08 million tons (in 2009/10). The plan shows a 24% annual growth rate over a five year period. The performance in the first year of the planning period (i.e. 2010/11) shows that the country is on-track to achieve this target. CSA report that performance in 2010/11 crop year exceeds the target by about 2 percent and this is encouraging. In terms of land

¹¹ Apart from this relatively small but positive trend in beef production and the commercialisation of livestock production, the consumption of sufficient meat is a rare extremity in Ethiopia. While developed and developing countries consumed a consistent level of 77kg and 25 kg, respectively, of meat per capita (Abbey, 2004), per capita consumption of meat in Ethiopia has never exceeded 8 kg (EEA, 2011).

¹² Potential explanation for this could be either a corresponding high growth in milk demand, imperfections in milk trade that lead to high transaction costs or potential error in either of the two data (production and price).

productivity, actual performance is, however, slightly lower than the GTP target for the year. While the target was to harvest about 17.5 quintals of grain per hectare of cultivated land, the reported performance was 17.2 quintal per hectare or about 98% of the target.

While the overall performance of the sector is encouraging, the continued high food inflation implies an urgent need for further strong and bold improvement in food production. Food prices, especially prices of staple foods, are critical element in helping agriculture to play its role as an engine of economic growth and in understanding changes in poverty. The parallel high growth in food production and food prices is not helpful for any agricultural transformation the country envisages over the coming few years.

In this regard, policy makers should work more on potential interventions helpful for rapid productivity growth in food production. Further investment in research and development to develop technologies tailored for diverse rainfed situation. Second, interventions that need greater participation of the private sector in technology development and especially in marketing is crucial. Both of these also need improved rural financial system.

Chapter Three

Investments in Commercial Agriculture in Ethiopia

3.1 Introduction

The history of commercial farms in Ethiopia dates back to the Imperial era. During the Second five year plan (1962-1966), the Imperial government tried to establish large scale irrigated commercial farms mainly with the participation of foreign investors. Cotton plantations were established in the Awash valley and at Setit Humera in the north-western part of Ethiopia. Since investments in the Awash valley were so important¹³, the Awash Valley Authority was established by an Imperial Decree in January 1962 as a change agent towards commercialization of agriculture in this area. The main objective of establishing the large scale farms was to ensure adequate and reliable supply of cotton for textile industries in the country.

During the socialist regime (1974-1991), investments in large-scale commercial farms were attuned to the socialist framework. The majority of large-scale farms established during the Imperial regime were converted into state farms. It was reported that about 75,000 ha of large-scale commercial farms owned by individuals and cooperatives were converted into state farms. The development of new state farms continued thereafter and the expansion was so dramatic. For example, the size of state farmland was about 216,000 ha by 1987/88 which accounted for 3.3% of the total cultivated land during

¹³ Important farms in the Awash valley included Tendaho, Melka Sedi, Melaka Werer and Yalo farms.

that year. This was supposed to increase to 6.4% (i.e. 468,000 ha) within the Ten-Year Plan period (1985-1994). The primary objectives of expanding state farms were to ensure the production of enough marketable-surplus for the urban population¹⁴, to produce raw materials for domestic agro-processing industries (e.g. cotton for textile industry, sugar-cane for sugar industry), and to produce cash crops (such as coffee) for direct export.

After 1991, the government has adopted several policy changes. One of the prominent policy changes was the declaration of the free-market economy and the concomitant promotion of private profit-making entities to take the leadership in the business. In fact, many state-owned enterprises have been privatized since then including former state farms. Meanwhile, the government has designed policy directions and strategies to attract new entrants and has promoted the expansion of existing ones resulting in the establishments of thousands of business enterprises in the agricultural sector.

The purpose of this chapter is to shade light on the demand for investments in commercial agriculture since 1992. It is based on the data collected from two major sources. Discussions in Sections 3-8 are based on the data collected from regional investment offices, Ethiopian Investment Commission, and Ministry of Agriculture. Section 9 was written based on data from CSA reports. The data obtained from the investment offices and Ministry of Agriculture forms our “primary” dataset and constitutes records on the size of land requested by investors for commercial agriculture, sources of investment projects (domestic vs foreign), proposed employment generation, date of investment licenses, locations of operations (region and zone), and types of products. Our dataset contains 7,110 cases of investment projects which were approved by the federal and regional investment authorities

¹⁴ There was a serious supply problem of staple food grains after the land reform of 1975 since peasants withheld major part of their produce for home consumption.

between early 1992 and end of 2011. Though we believe that substantial majority of the total investment projects in agriculture have been captured, we don't claim that our dataset contains an exhaustive list of approved investment proposals on commercial agriculture. Missing projects may be substantial in some regions such as Oromia. Moreover, data for recent years are missing for Addis Ababa, Harari, and Dire Dawa. We interpreted missing values in the latter three regions as an absence of new agricultural projects. Since these are city-based administrations, and land is getting scarcer over time, their focus in recent years with regards agricultural investments might be agro-industries which we haven't considered in this report.

3.2 Institutional Setup for Investments in Commercial Agriculture

Investments in commercial agriculture are directly or indirectly linked with a number of offices. Regional investment offices are responsible for providing licenses for domestic investors whereas the Ethiopian Investment Commission is responsible for providing licenses for foreign investments. Regional offices for environmental protection and land use administration (EPLUAs) are responsible for locating the investment projects and monitoring and evaluation of the same. Regional agricultural offices provide technical supports to investors when demand arises. The Ministry of Agriculture (MoA) is responsible for approving and locating large-scale foreign investment projects, monitoring and evaluation of approved projects, and providing technical support to investors on production aspects. Currently, MoA is serving as a facilitator for foreign investors who have applied to invest in different regions. The role of MoA is more important in Gambella and Benishangul-Gumuz regions than in other regions since these regions could attract relatively large number of investors due to their abundant land while they lack the institutional capacity to provide efficient services for the incoming investors.

3.3 The Demand for Land

The aggregate area of land requested for all investment projects considered in this report is about 5.5 million hectares. This is equivalent to the size of land converted to arable land in Sudan in 1970s and is more than double of the land transferred to commercial farmers in 2004-2009 in Mozambique (World Bank 2010). However, the figure is quite low as compared to the total arable land of the country estimated at 74.3 million hectares (Access Capital Research 2012).

There is a considerable variation among regions with regards to the distribution of farmlands requested by investors. Oromia region stands first in terms of the aggregate area of the land requested for commercial agriculture accounting for about 34% of the total land; it is closely followed by Amhara region (32.9%). The other important regions in terms of the aggregate size of land requested are Benishangul-Gumuz region (10.7%), SNNPR (8.1%) and Gambella region (7.7%). The remaining regions altogether account for about 7% of the total land requested for commercial agriculture with the following individual shares: Tigray (3.1%), Afar (2.6%), and Somali (1%). Harari region and the two city administrations (i.e. Addis Ababa and Dire Dawa) together account for less than 0.1%.

The mean land requested by investors per project is about 772 hectares; the minimum is 0.1ha (1000 meter sq.) and the maximum is 200,000 ha. The largest land request per project was made in Oromia region where a company requested for 200,000 hectares of land. The maximum land requests per project in other regions vary from 10 hectares (in Dire Dawa administration) to 100,000 hectares (in Gambella) (Table 3.1).

Table 3.1: Land size (ha) under agricultural investment projects by region

	Smallest (ha)	Largest (ha)	Mean (ha)
Addis Ababa	0.1	120	12.5
Afar	6.00	50,000	2,136.8
Amhara	0.1	50,000	671.2
Benishangul-Gumuz	1.0	50,000	2,228.6
Dire Dawa	0.1	10	2.8
Gambella	50	100,000	1,396.1
Harari	0.3	400	90.1
Oromia	0.1	200,000	713.7
SNNP	0.2	40,000	605.4
Somali	379.00	1,000	6728.3
Tigray	0.18	20,000	377.0
Overall	0.1	200,000	771.5

To provide a better picture of the demand across regions, land requests were classified into three categories as follows:

Small land requests (SLR): requests for less than 100 hectares of land (i.e. < 1 square Kilometre),

Medium land requests (MLR): requests for 100 hectares of land or more but less than 1,000 hectares (i.e. 1- 9.9 square Kilometres),

Large land requests (LLR): requests for 1,000 hectares of land or more (i.e. \geq 10 square Kilometres)

SLRs constitute about 43.9% of the total number of applications out of which about 50% are small projects (at least in terms of land size) designed to operate less than 10 hectares. The shares of MLRs and LLRs are 43.2% and 12.9% respectively. Visible geographical variation exists in terms of the percentage of total investment licenses under each of the three categories although SLRs and MLRs are dominant in most of the regions (Figure 3.1). LLRs constitute small proportions of the total number in all regions.

LLRs are mainly found in three regions namely: Amhara, Oromia, Benishangul-Gumuz, and Gambella regions. These four regions account for more than 85% of the total number of large scale projects in the country. Amhara region takes the lion’s share of the total number with 56.2% of the total share which is distantly followed by Oromia (16.2%), Benishangul-Gumuz region (10%) and Gambella region (9%). The aggregate share of the remaining regions is less than 10%. Oromia region is dominant in terms of small scale requests for land (57.7%) and Amhara region follows with 27.2% share. The other regions altogether account for about 15% of small requests. With regards to the medium scale land requests Amhara region leads by 42.8% of the total request which is followed by Oromia (21.1), SNNP (13.1%), and Tigray (9.5%). Other regions constitute the remaining balance.

Figure 3.1: Shares of SLRs, MLRs, and LLRs in terms of number of projects

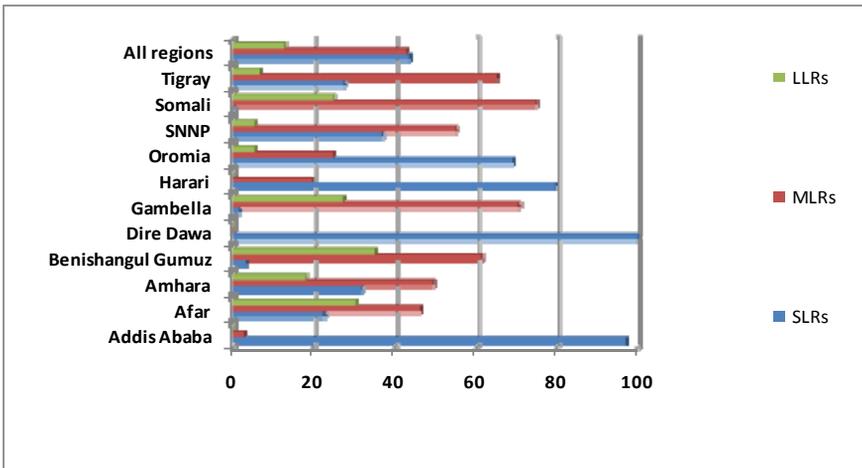
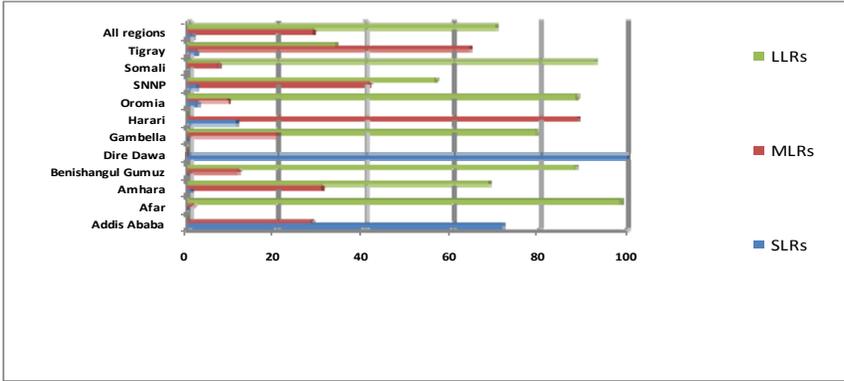


Figure 3.2: Shares of SLRs, MLRs, and LLRs in terms of requested land size



The picture is different when SLR, MLRs, and LLRs are compared with respect to the aggregate area of land requested. In this regard, LLRs take the lion’s share accounting for about 70% of the total land requested for agricultural investments in the country (Figure 3.2). MLRs account for about 29% whereas the share of SLRs is only 1%. Visible regional variation exists in this regard. LLRs highly dominate SLRs and MLRs in majority of the regions namely: Afar, Amhara, Benishangul-Gumuz, Gambella, Oromia, SNNP, and Somali regions. LLRs account for greater than one-half of the total land requested for commercial agriculture in these regions. Addis Ababa, Dire Dawa, and Harari take the other extreme with zero shares of LLRs while Tigray region is intermediate with about 34%. On the other hand, SLRs are highly dominant in Addis Ababa and Dire Dawa. Perhaps, the latter result is an expected one given the fact that Addis Ababa and Dire Dawa are city administrations and, hence, large scale agricultural production doesn’t have a comparative advantage over the other forms of business (i.e. manufacturing and services) arising from high value of land in these areas as compared to other regions. The shares of MLRs vary from zero (in Dire Dawa) to 88.8% (in Harari region).

The distribution of the size of land requested is highly skewed towards the right indicating the existence of a few extreme values towards the right of the median. A closer look at the data shows that the top quintile accounts for about 85% of the total land requested for commercial farming. The results show that, if the requested lands are entirely transferred to investors, land concentration among a few investors will become a serious problem.

Regions have different positions in terms of the aggregate land requests corresponding to each of the three categories. Oromia and Amhara regions account for more than two-third of the total land requests within the category of LLRs; Oromia takes the lead with 38.6% share and Amhara follows with 29.4%. Other regions take the following order and percentage values: Benishangul-Gumuz (12.1%), Gambella (7.8%), SNNPR (5.9%), Afar (3.6%), Tigray (1.3%), and Somali (1.2%). The majority of small land requests were made in three regions namely, Oromia (57.8%), Amhara (22.9%), and SNNP (12.9%). These regions account for more than 90% of the total area under the category of SLRs. Amhara region is dominant in terms of MLRs accounting for about 46% of the total land corresponding to this category. Other notable regions are SNNPR (15.7%), Oromia (14.7%), and Tigray (9.3%).

A more disaggregated demand for land is displayed by Figure 3.3 and Figure 3.4¹⁵. The figures display that high demands for land mainly exist in the western, north-western and south-western parts of the country¹⁶. Figure 3.4 shows the level of demand for land by zone as it was measured by the total area of land requested and approved for commercial agriculture. Administrative zones with the highest land demands are North Gondar, Awi,

¹⁵ Some zonal boundaries are approximate.

¹⁶ The maps do not reflect the distribution of the actual demand for land in Oromia region due to lack of data on the zonal addresses of the requested lands. About 77% of the total land requested in this region was not considered in the preparation of the maps.

West Gojam, and East Gojam in Amhara region, Assossa and Metekel in Benishangul-Gumuz region, and the Agnuak in Gambella region. The other important zones are the Nuer zone in Gambella region and the Western zone in Tigray region.

Figure 3.3: Land demand as measured by the total land requested

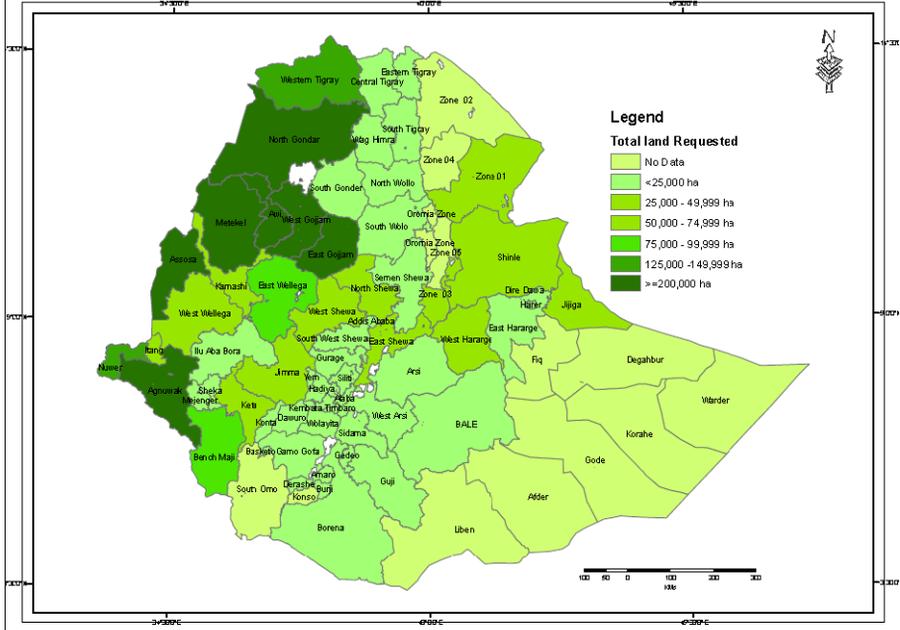
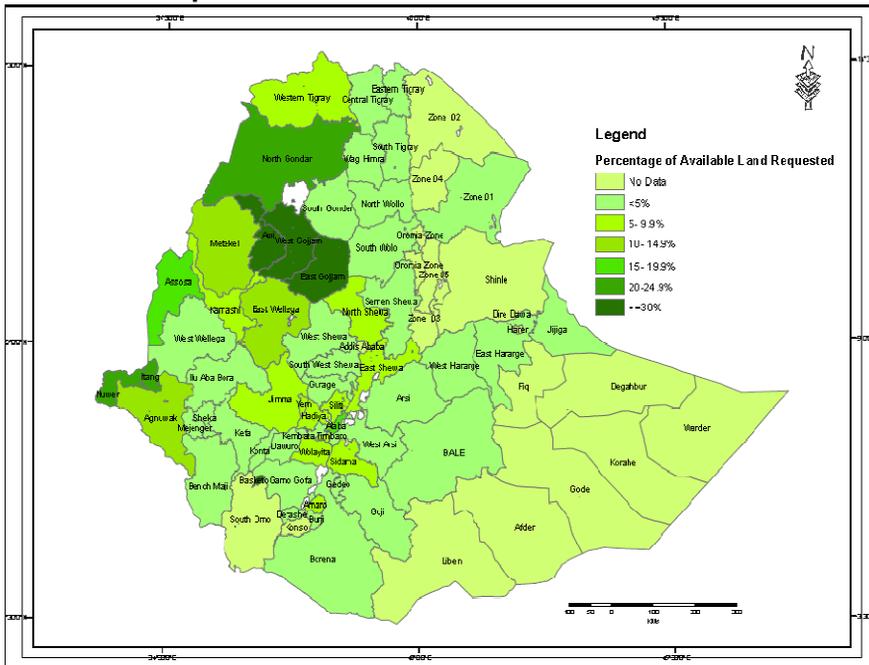


Figure 3.4 provides an alternative picture of the demand for land for commercial agriculture. In this case, the demand for land was measured by the percent of the total potential land available¹⁷ for commercial investment which was requested for commercial agriculture (PALR). The values of PALR generally lie between 0 and 40%. The exception is the Awi zone of Amhara

¹⁷ The potential land for commercial agriculture was computed by deducting the total area of land under peasant holdings from the total area of the corresponding zone.

region for which the PALR value reaches 74%. West Gojam (Amhara), East Gojam (Amhara), Awi (Amhara) and Basketo (SNNPR) are among the zones with high land demand based on this parameter. Other notable zones are the Nuer zone and the Itang Special Woreda of Gambella region and the North Gondar zone of Amhara region.

Figure 3.4: Land demand as measured by percent of available land requested



3.4 Areas of Investments in Agriculture

Four categories of investments were identified, namely: 1) mixed agriculture, 2) livestock production, 3) horticulture and permanent crops (hereinafter

termed as *horticulture* for brevity), and 4) forestry, and forest products and apiculture (hereinafter termed as *forestry*). Mixed agriculture mainly constitutes grain producers; but it also includes projects designed for the production of other types of crops (such as cotton) as well as livestock in addition to grains. Livestock production constitutes bull fattening projects, dairy farms, goat and sheep farms, poultry farms, and pig farms. The category of horticulture includes projects designed to produce: fruits and vegetables, coffee and tea, flowers and ornamental plants, sugarcane, spices crops, bio-fuel trees (e.g. *Jatropha* and *Pongamia*), or mixtures of these. The category of forestry includes projects designed for artificial forest development, incense and gum production, natural rubber production, and honey production. A fifth category was annexed to the above major categories to capture a few remaining specializations such as silk production, crocodile production, insect production, production of medicinal plants, production of game birds, etc. Our classification was dictated by the output mixes of the farms. General purpose farms were put in the category of “mixed agriculture”¹⁸ and specialized farms were put together in a way that (as we feel) each category makes sense.

Investment projects within the category of “mixed agriculture” are highly dominant over the others in terms of number and accounts for about 56% of the total (Figure 3.5). The categories of “livestock production” and “horticulture” account for 22.3% and 18.1% respectively. Projects in the other two categories had quite a small share (i.e. about 4% together).

Differences are visible among regions with regards to the distribution of investment projects in different categories. Investment projects designed for

¹⁸ For example, producers of grain crops were included in the category of “mixed agriculture” because of the fact that the majority of grain producers captured by our dataset were engaged in the production of other crops and livestock too.

livestock production are dominant in Addis Ababa, Dire Dawa, Harari, and Oromia. In all other regions mixed agriculture is the most important. Projects in the category of horticulture constitute substantial proportions of projects in Oromia, SNNP, and Somali regions though they are not dominant.

The shares of regions vary regarding the number of projects within different categories of investment. Most of the investment projects in the category of mixed agriculture are located in Amhara region (46.5%). The shares of other regions are as follows: Oromia (20%), SNNP (9.4%), Tigray (8.6%), Gambella (7.4%), and Benishangul-Gumuz (6%). More than 85% of the proposed investment projects in livestock production are found in Oromia and Amhara regions: Oromia leads with 58.4% and Amhara follows (27.8%). Other notable regions in terms of livestock related investment projects are SNNPR (6.3%) and Tigray (4.7%). Projects in the category of horticulture are mainly found in three regions namely Oromia (60%), Amhara (19.4%), and SNNP (17.2) while other regions altogether account for less than 5%. Similarly, more than 90% of the investment projects in the category of forestry are registered in these three regions with following proportion: Amhara (41.7%), Oromia (32.7%), and SNNPR (12.8%). The other notable region with regards to projects in the category of forestry is Benishangul-Gumuz which accounts for 8.5% of the total projects in that category.

Figure 3.5: Share of different categories of investment in terms of number of projects, by region

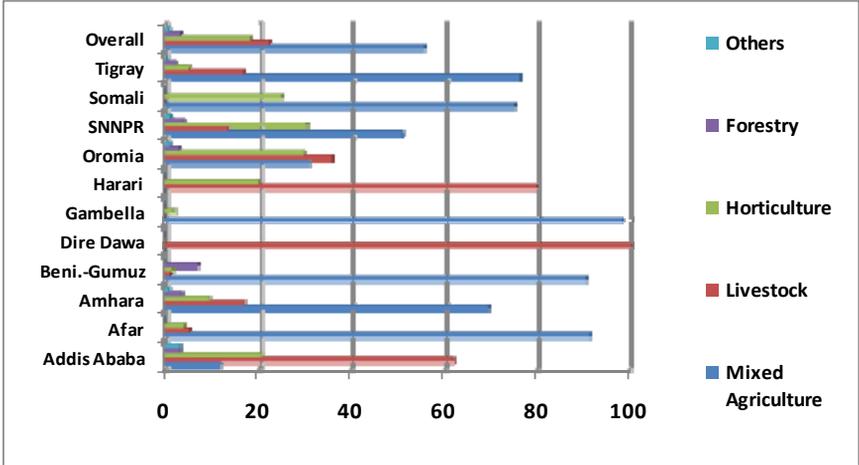
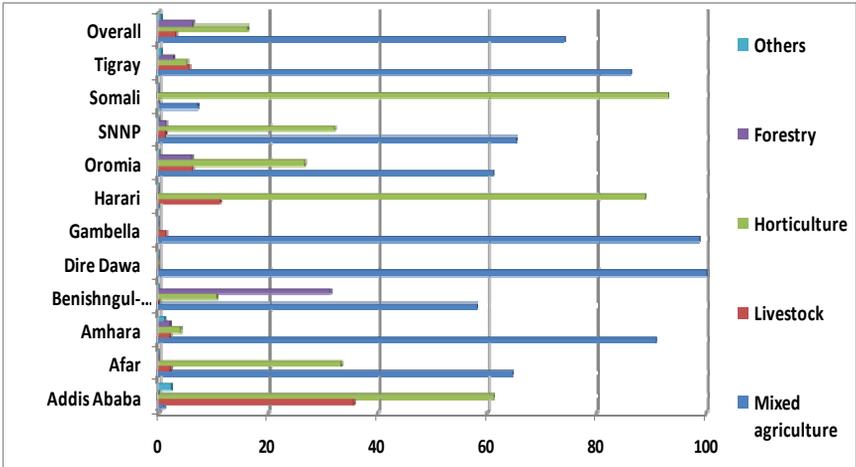


Figure 3.6: Share of different categories of investment in terms of requested land size, by region



When we consider the aggregate land requested by investors for the projects, the picture is different. The total land requested to undertake mixed agriculture constitute about 75% of the total land requested for commercial agriculture. The category of horticulture takes the next rank with only 16% while the remaining categories constitute the remaining balance. The pattern is almost the same across regions with the exception that the category of horticulture is dominant in Addis Ababa, Harari, and Somali regions while forestry takes the second position in Benishangul-Gumuz (Figure 3.6).

The regional distributions of the demand for land vary across investment categories. Large proportions of the land requested for mixed agriculture are found in Amhara (40.2%) and Oromia (27.8%). Gambella, Benishangul-Gumuz, SNNPR, and Tigray account for nearly 30% altogether whereas the individual shares of the other regions are quite small. Oromia is the single dominant region in terms of the size of land requested for livestock production. It accounts for about 65% of total land demand in this regard. Amhara region distantly follows with 21.4% while the other regions individually contribute less than 5%. Similarly, Oromia takes the lion's share (56%) of the land requested for the production of horticultural crops. SNNPR, Amhara, Benishangul-Gumuz, Gambella, Somali and Afar together constitute 97% of the remaining balance. With regards to the land requested for investments in the category of forestry, Benishangul-Gumuz is the most important region. It takes 54% share. Oromia and Amhara regions are the other notable regions in this regard with 32.7% and 10.7% contributions, respectively.

3.5 The Players

The majority of the approved investment applications (80.5%) were made by domestic investors; foreign investment projects and joint ventures constitute only 19.5% of the total number. Considerable variation exists across regions

with regards to the distribution of the three categories though domestic investment projects are dominant in all regions (Figure 3.7). Foreign investment projects constitute about one-third of the regional total number in Oromia and Addis Ababa while they constitute less than 10% in the remaining regions.

Regional shares are different in terms of the number of projects in each category of investment. Amhara accounts for 43.1% of the total number of approved domestic investment applications in the country which is followed by Oromia (27.9%). Projects in the remaining regions constitute less 10% of the total number in this category. About 80% of foreign investment applications were approved in Oromia. The other notable regions in this regard are Amhara region and SNNPR which account for 14.3% and 3.9% of the total foreign investment projects in commercial agriculture. The majority of joint venture projects were approved in three regions namely: Amhara region (43.2%), Oromia (31.6%), and SNNPR (14.7%).

Figure 3.7: Share of Domestic, Foreign, and Joint-venture investments in terms of number projects, by region

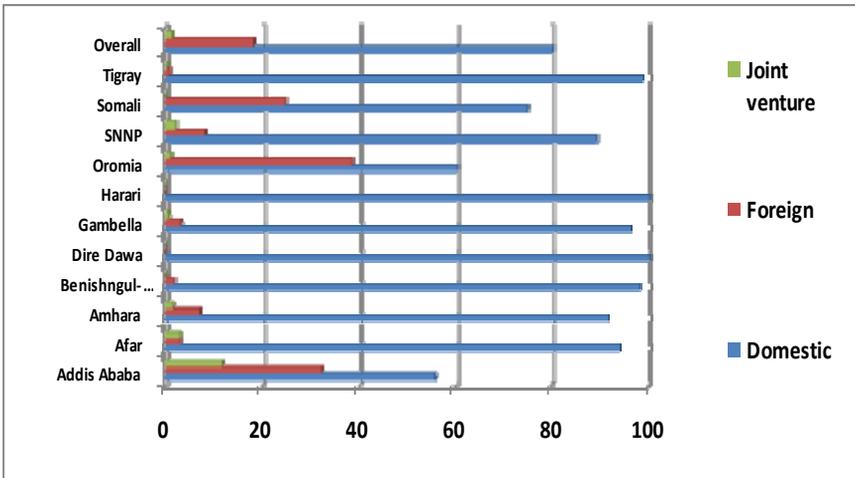
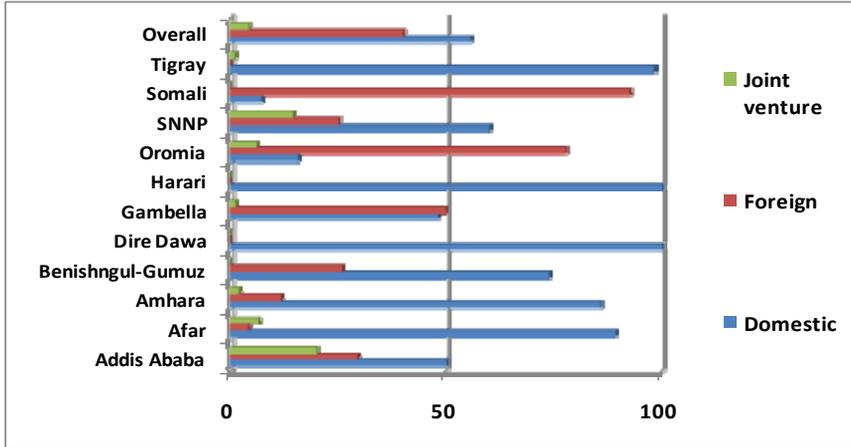


Figure 3.8: Share of Domestic, Foreign, and Joint-venture investments in terms of the requested land size, by region



In terms of the total area of land requested, the share of domestic investments is not as high as their percentage share of the total number of agricultural investment projects (compare the bars corresponding to the “overall” category in Figure 3.7 and Figure 3.8). In this case, the share of domestic projects is 55.8% while that of foreign projects is 40.1%. The remaining balance goes to joint venture projects. The difference can be explained by the larger average land requested by foreign investors: i.e. the average size of land requested by foreign investors is about 1,722 ha which is higher by about 1,184 ha (i.e. 220%) than that of domestic investors (i.e. 538 ha).

It seems that the geographical focuses of domestic and foreign investors are different as indicated by the aggregate land requested by the investors in each region as a percentage share of the total. Domestic investors made extensive requests in Amhara region which accounts for about 51% of the total land requested by domestic investors. The other notable region in terms of

domestic land requests is Benishangul-Gumuz region which accounts for 14.3%. On the contrary, the largest percentage (i.e. about two-third) of the total land requested by foreign investors is found in Oromia region. Amhara, Gambella, and Benishangul-Gumuz account for almost all of the remaining balance but their individual shares are less than 10%. Oromia takes again the lion's share (about 50%) with regards to the total land requested for joint venture projects. It is followed by SNNPR (24.8%) and Amhara region (17.5%).

Domestic investors are dominant in terms of the total land requested for commercial agriculture in most of the regions (Figure 3.8). In this regard, Harari, Dire Dawa, and Tigray take the upper extreme where domestic requests constitute more than 90% of the total land. Amhara and Afar regions take the upper-middle position with more than 85% while Benishangul-Gumuz and SNNPR take the lower middle position with more than 60% share of domestic requests. On the contrary, foreign investors dominate domestic ones in terms of the size of land requested in Oromia (78.1%), Gambella (50.3%) and Somali regions (92.9%). Foreign investors have also substantial shares in Addis Ababa (29.6%), Benishangul-Gumuz region (25.9%), and SNNPR (25.1%). Land requests for joint venture projects are relatively low in all regions. However, joint venture projects have better positions in Addis Ababa (19.9%) and SNNPR (14.8%).

Domestic projects are dominant over foreign ones in terms of number in all categories of investment. Domestic projects constitute more than 90% of the projects in the categories of mixed agriculture and forestry and more than 50% in the remaining categories (Figure 3.9). However, foreign investors and domestic investors are different in terms of enterprise selection as implied by the percentage values corresponding to each category. The category of mixed agriculture constitutes only 27% of the foreign projects whereas the figure corresponding to domestic ones is substantially higher (62.3%) implying that

domestic investors had clear inclinations towards mixed agriculture. On the contrary, horticulture and livestock are more important than others among foreign investors constituting 37.4% and 32.5% respectively. Joint venture projects are dominated by projects in the categories of mixed agriculture (42.1%) and horticulture (35.8%). Projects in the categories of forestry and others constitute insignificant number across all the three categories.

Figure 3.9: Share of Domestic, Foreign, and Joint-venture investments in terms of number of projects, by investment category

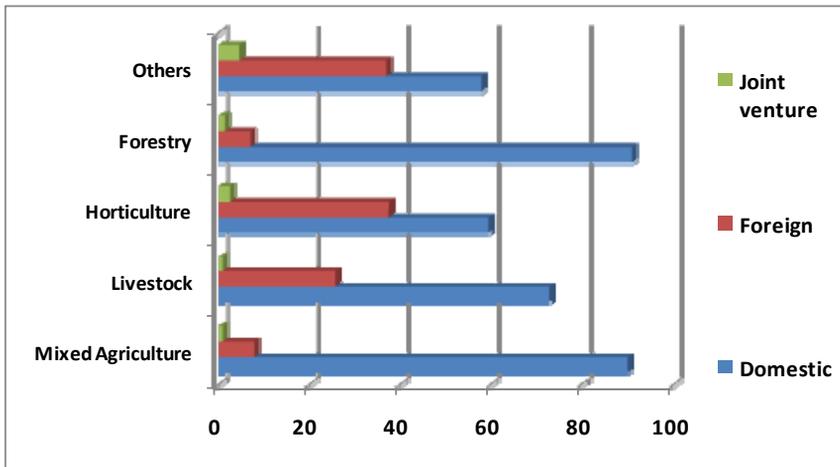
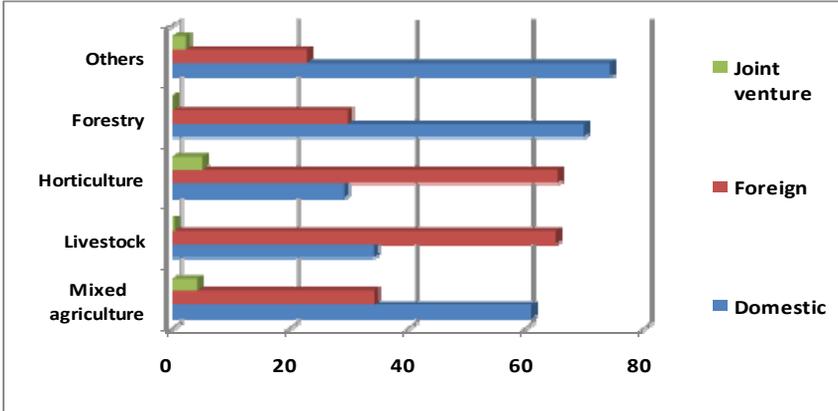


Figure 3.10: Share of Domestic, Foreign, and Joint-venture investments in terms of the requested land size, by investment category



The picture is again different when we bring land size at the centre of analysis. In this regard, domestic projects are dominant not in all categories of investment but they are dominant in the categories of mixed agriculture, forestry, and other specialized productions. Larger portions of the land requested for horticulture and livestock production are associated with foreign investors (Figure 3.10). However, projects in the category of mixed agriculture are dominant over the other categories in terms of the total land requested; i.e. mixed agriculture constitutes about 81% of the land requests of domestic investors, about 64% of foreign investors, and about 78% of joint ventures.

3.6 Employment Generation¹⁹

One of the reasons why countries encourage large-scale commercial farms is that these farms contribute to the local economy by generating employment

¹⁹ Results presented in this section exclude Gambella region due to lack of data.

for the local people. The Ethiopian government has a strong expectation that the current expansion of large-scale farms would create a huge employment opportunity for the local people as well as migrants. Expectations are high particularly with regards to those “mega-farms” supposed to cultivate tens and hundreds of hectares of land. However, others doubt whether the employment contributions of the large-scale farms outweigh the potential adverse effects of these farms (e.g. environmental degradation and social disorder due to displacement) (Rahmeto 2011, Gobena 2010).

Commercial farms in Ethiopia are expected that they would generate extensive employment for the local people as implied by the investors on project proposals. According to the proposals, about 86% of the farms would employ both permanent and temporary workers while the remaining would employ either of the two. The mean ratio of temporary workers to permanent workers is about 15 to 1 and the mean potential employment generation is about 7 persons per hectare. Given these results, a farm operating 100 ha of land, for instance, can hire about 44 permanent workers and about 656 temporary workers²⁰.

Potential small, medium, and large farms²¹ were compared in terms of the potential employment they would generate per hectare and the potential employment they would generate per project. The results show that small farms generate the highest employment per hectare while large farms generate the lowest (Table 3.2). The differences in potential labour consumption among the three categories of farms may reflect their differences in the designs of production. Large farms are usually designed for extensive mechanization which makes them less labour intensive as compared

²⁰ Temporary workers include contractual as well as casual labourers.

²¹ SLRs, MLRs, and LLRs are considered as potential small farms, medium farms, and large farms respectively. The word “potential” can be ignored for those farms which are operational.

to small farms. This is not usually the case for small farms. However, the mean potential employment per project is the highest for large farms and the lowest for small farms. Medium farms lie in between in terms of both parameters.

Table 3.2: Employment generation potential of small, medium, and large farms

	Number of cases	Mean employment per hectare	Mean employment per project
Small farms	2,784	14.5	103
Medium farms	2,693	1.1	333
Large farms	739	0.5	962
All farms	6,216	7.0	305

The level of employment generation varies across different investment categories. Investments projects designed for livestock productions are the most labour intensive; they can generate employment for about 17 persons per hectare (Table 3.3). Horticulture and forestry are the next labour intensive categories of investment whereas mixed agriculture is the least. Visible variation also exists among the categories of investment projects with regards to total potential employment per project. In this case, however, livestock enterprises can employ relatively small number of people per project which is related to their smaller average size (i.e. in terms of land) as compared to others. Horticulture can employ the highest number whereas forestry and mixed agriculture take the second and third positions.

The results show that engaging in product processing may enhance the employment generation capacity of investment projects. The average employment generation capacity of investments which combine production and processing is 17.3 persons per hectare. This is substantially higher than the average figure corresponding to those projects which do not process (6.5 persons per hectare). Projects which combine production and processing are

also better than their counterparts in terms of the quality of employment as measured by the percent of permanent employment positions. In this regard, about 52% of the employees of the farms which process their products are expected to be employed on permanent basis. This figure is substantially higher than the figure corresponding to projects which do not process (i.e. about 33%).

Table 3.3: Employment generation potential of different farm categories

	Number of cases	Mean employment per hectare	Mean employment per project
Mixed agriculture	3,385	2.3	387
Livestock	1,402	16.8	49
Horticulture	1,181	9.0	386
Forestry	173	4.7	316
Others	59	8.5	113

3.7 Inter-temporal Comparisons

Periods for Comparisons

The entire period since the downfall of the Dergue regime was divided into five sub-periods to guide our analysis. These are the pre-ADLI period (1992-1994), the ADLI period (1995-1999), the PRSP/SDPRP period (2000-2004), the PASDEP period (2005-2009), and the early GTP period (2010 and 2011). The periods are defined such that each of them coincides with a national strategic plan implemented by the government. Each of these periods will be described briefly in the following paragraphs to facilitate better understanding of the discussions afterwards.

The pre-ADLI period was the period of the transitional government during which efforts were made to reorient the economy from a command economy to a market oriented one. No clear national development strategy was formulated during this time. Rather a structural adjustment program (SAP) proposed by the World Bank was adopted to guide domestic policies²². Many state-owned business enterprises were privatized though the privatization effort was not rural-focused.

After the ratification of the Federal Constitution and the establishment of the Federal Democratic Republic of Ethiopia (FDRE) in 1995, the government adopted Agriculture Development Led Industrialization (ADLI) as a national development framework and with specific long-run objectives of, among others, commercializing smallholder agriculture and supporting the development of large-scale commercial agriculture. The ADLI served both as a long-run national development framework and as a short-run development strategy until 2000.

The first short-run national development program after 1991 was the Sustainable Development and Poverty Reduction Program (SDPRP). The SDPRP period started with an initiative known as Poverty Reduction Strategy Program (PRSP) in 2000 which was later developed into a national development program in July 2002 (MOFED 2002). The focus of the government during the PRSP/SDPRP period was poverty reduction (as well as food security) at national and household levels. This was supposed to be addressed mainly by increasing production and productivity in the smallholder sector.

²² SAP was implemented with a financial support of the World Bank and African Development Fund (ADF) on behalf of the African Development Bank Group (AfDB). The major part of the loan (69%) was contributed by the World Bank (AfDB 2000). The objective of SAP in Ethiopia (as it might be in other countries) were stabilization of the economy in order to restore macroeconomic balance and reduce inflation and to stimulate medium and long term growth.

The PASDEP, which stands for the Plan for Accelerated and Sustained Development to End Poverty, represents the second phase of the SDPRP. It envisaged greater commercialization of smallholders' agriculture and greater participation of the private sector in commercial agriculture. A substantial revenue was anticipated from exports of agricultural products such as horticultural crops (e.g. fruits and vegetables), coffee and tea, livestock products (e.g. meat), and forest products (e.g. natural gum) (MOFED 2006).

The national development plan which is currently being implemented is the Five-Year Growth and Transformation Plan (GTP). One of the objectives of the GTP is to transform the Ethiopian agriculture to a commercial business. While smallholder agriculture remains a central focus of the government, large-scale commercial agriculture has got greater emphasis in the GTP as compared to the previous programs. For instance, the government announced (towards the beginning of the GTP period) that it would offer about 3.2 million hectares of land to commercial investors with special attention to high-value crops such as flowers, fruits, vegetables, and herbs (MOFED 2010).

Initiatives for Agricultural Investments during these Periods

On average, about 355 agricultural investment projects were approved each year between the beginning of 1992 and the end of 2011. However, there is a visible variation between the five periods identified above along the entire time line. On average about 950 projects were approved during the PASDEP period which is greater than any of the figures corresponding to the other periods. The second in the rank is the early GTP period during which about 522 projects were approved on average each year. The number of projects approved per year during the remaining three periods didn't exceed 150. The average total land requested by investors per year during the early GTP period was about 720,250 ha which was the highest of all other periods. The

second in the rank is the PASDEP period with an average figure of about 672,720 hectares. The figures corresponding to the remaining three periods are below 50,000 hectares.

The trend of approved investment applications have been increasing overtime since 1992 both in terms of the number of projects approved and the area of land requested, though with irregularities (Figures 3.11 and 3.12). This pattern is, by and large, the same for domestic, foreign, and joint venture projects. A kind of trough was observed between 1997 and 2002 which covered significant portions of the ADLI and PRSP/SDPRP periods. Perhaps this is due to the Ethio-Eritrean war and a serious drought that occurred during this time which might have affected the expectations of potential investors and also diverted the attention of the government from investment promotion to disaster management and national security²³.

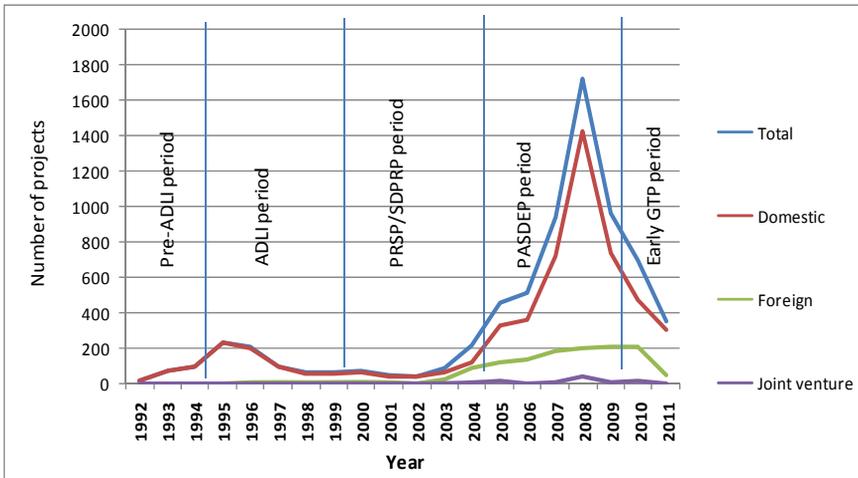
Positive changes occurred in 2002 in the investment code and the overall institutional framework to widen the scope of participation of foreign investors in addition to domestic ones. A notable change in the investment code was the endorsement of Proclamation No. 280/2002 (latter replaced by Proclamation No. 375/2003) which, in addition to the incentives stated in Proclamation No. 37/1996, allows a number of provisions to domestic and foreign investors such as investment guarantees and protection, ownership of immovable property for foreign investors, and the right to make remittances out of Ethiopia. It was also declared in the Proclamation that the service delivery would be more efficient than ever before²⁴. Moreover, the Ethiopian Investment Agency (later renamed as Ethiopian Investment Commission) was established as an autonomous entity to serve as a nucleus for matters of

²³The Ethio-Eritrean war took place from May 1998 to June 2000. This was followed by a serious drought that occurred in 2001 and 2002.

²⁴ According to the Proclamation an appropriate investment organ should issue a permit for an applicant investor within 10 days of a complete application.

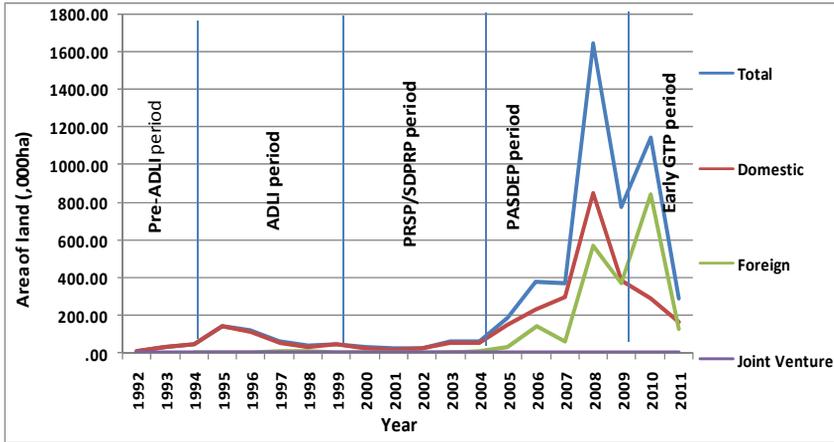
investment and to promote, coordinate and enhance activities thereon. Such changes in the institutional framework and the political stability in the country (particularly after 2006) have contributed to large attractions of foreign as well as domestic investors. In fact, a positive and continuous growth was observed in the number of investment projects approved between 2003 until 2008. The growth was abrupt between 2007 and 2008 which can be attributed to extensive investment promotions made by the government during the Ethiopian Millennium celebrations²⁵.

Figure 3.11: Number of projects in commercial agriculture approved each year since 1992



²⁵ The Ethiopian Millennium was celebrated for one year from September 2007 to August 2008 at home and abroad. Ethiopian Embassies were given high responsibility to organize discussion forums to promote investment and build the good image of the country.

Figure 3.12: Area of land requested for commercial agriculture each year since 1992



However, the number of approved projects has sharply declined after 2008 and has continued declining during the early GTP period. The total size of land requested has also shown a pattern similar to the number of projects though, in this case, a positive change was observed in 2010 due to the introduction of several “mega” foreign investments particularly in land abundant regions such as Gambella and Benishangul-Gumuz. However, there was a sharp decline both in the number of approved projects and the area of land requested in 2011. The area of land requested by domestic investors has continuously declined after 2008.

It seems that the regional governments (as well as the Federal government) have opted for a “stop-and-see” strategy after extensive provisions of land to potential commercial farmers between 2003 and 2008. Results from our key informant interviews indicate that investment organs in several regions started honouring investment regulations which had not been strictly followed earlier to provide licenses as they learned that some investment projects, particularly

domestic ones, were not genuine while others had potential environmental problems. For example, the amount of financial capital declared by an investor during an investment application was not checked against the bank deposits of the investor during and before 2008. Nor were the material, physical, and human capitals of the investor critically evaluated to accept the investment application. Rather, project approvals were mainly driven by naïve ambitions to boost investment and, hence, concerned authorities couldn't identify potential "land grabbers" from genuine investors. However, licensing procedures have become more stringent after 2008. Meanwhile, the supply of land for commercial agriculture has been constrained by natural scarcity in recent years. This is the case particularly in Amhara, Oromia, SNNPR and Tigray regions where rural areas are densely populated and land is getting more and more fragmented as a result of population pressure. Indeed, extensive commercial farms are not promoted as such in these regions at present. Instead, agro-processing industries and other land-saving investments (e.g. flower production) are promoted²⁶.

The majority (64.3%) of the investment projects were approved during the PASDEP period. The PASDEP period and the early-GTP period together account for about 80% of the total projects. The share of the PASDEP period is about 62% with regards to the total area of land requested for commercial agriculture and that of the early-GTP period is about 26%. Land requests during the three pre-PASDEP periods constitute a small proportion of the total requests during the entire period (i.e. 1992-2011).

A disaggregated analysis vis-à-vis domestic investments, foreign investments and joint ventures yield a similar pattern. The PASDEP period and the early-

²⁶ For example, the Amhara National Regional State has started discouraging agricultural investments which do not have processing components (Personal communication with Amhara region investment liaison officer).

GTP period together take the lion’s share of the total number of approved investment projects across the three categories (Figure 3.13). In fact, about 77% of the domestic projects, 87% of the foreign projects, and 91% of the joint ventures were approved either during the PASDEP period or during the early-GTP period. Similarly, about 80% of the land requested by domestic investors and about 99% of the land requested by foreign investors (either under sole arrangements or in the form of joint ventures) were approved during the PASDEP period or thereafter (Figure 3.14).

Figure 3.13: Comparison of the five periods in terms of the total number of projects

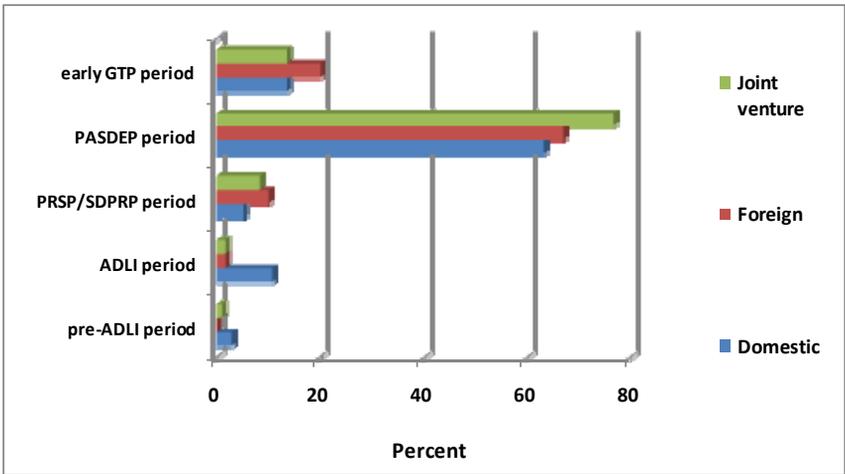
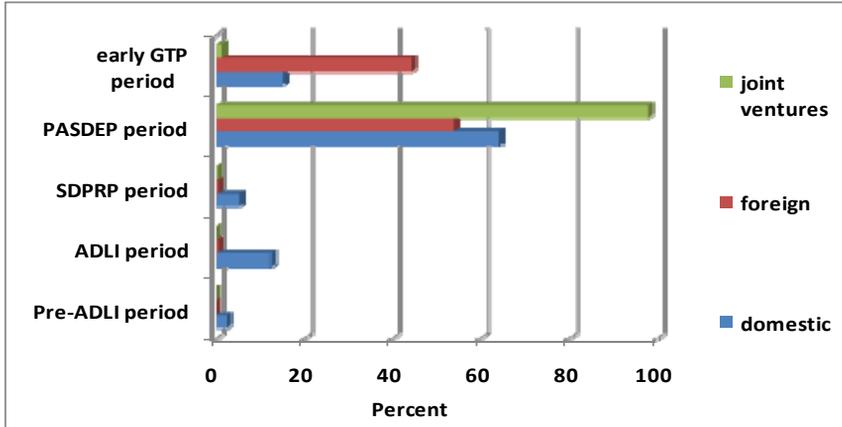


Figure 3.14: Comparison of the five periods in terms of the area of land requested

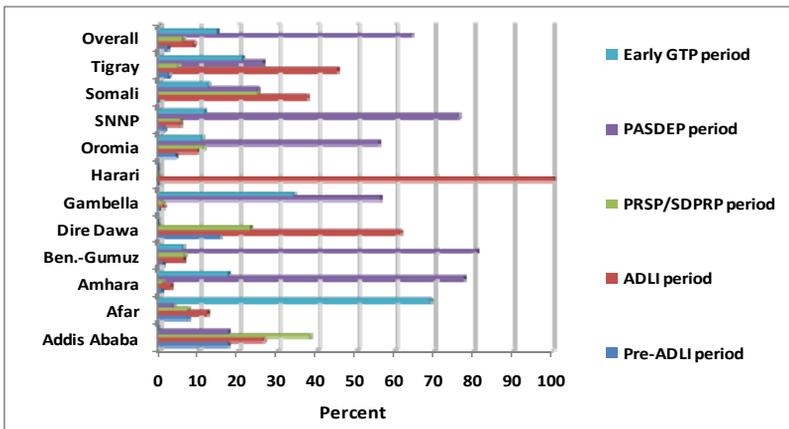


The significance of foreign investments in terms of the aggregate land requested for commercial agriculture became more visible during the PASDEP and the early-GTP periods. While pure foreign investments and joint ventures together accounted for less than 10% of the total size of land requested during the three pre-PASDEP periods, their shares rose to 42% during the PASDEP period and to 68% during the early-GTP period. Endorsements of extensive large-scale foreign land requests in the past few years have substantially contributed to this big change in the significance of foreign and joint venture projects.

The distributions of the projects vis-à-vis the five periods indicate a similar pattern in most of the regions. About 81% of the projects in Benishangul-Gumuz region, 77.6% in Amhara region, 76.2% in SNNPR, 56.7% in Gambella region, and 56.9% in Oromia region were approved during PASDEP period (Figure 3.15). The remaining balance is mainly associated with projects approved during the early-GTP period. However, there are regions with a

different pattern in this regard. In Tigray, Somali, and Afar regions only about 25% of the projects recorded were approved during the PASDEP period; in Harari and Dire Dawa, no project corresponding to the PASDEP period was found in our dataset. Projects approved during the early-GTP period constitute about 16% of the total number in all regions. The exception is the Gambella region where the early-GTP period accounts for about 37% of the total number of approved projects.

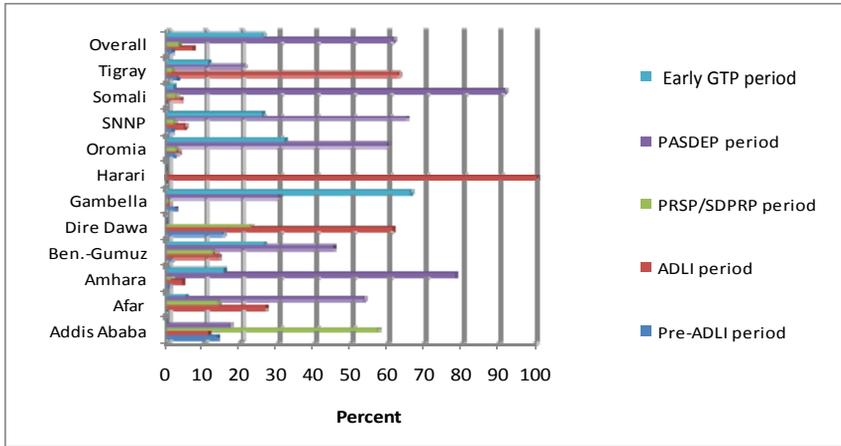
Figure 3.15: Comparison of the five periods in terms of number of projects approved in different regions (% of total number)



Similarly, projects approved during the PASDEP period or thereafter account for the substantial shares of the total land requested for commercial agriculture in several regions namely Gambella, Amhara, Benishangul-Gumuz, SNNPR, Oromia, and Afar (Figure 3.16). Gambella is exceptionally different from other regions in this case because the largest share (i.e. 66.4%) of the land approved for commercial agriculture corresponds to the early-GTP period which implies that most of the land requests in Gambella are more recent as compared to other regions. On the contrary, most of the lands

requested in Tigray, Addis Ababa, and Dire Dawa were approved during the three pre-PASDEP periods.

Figure 3.16: Comparison of the five periods in terms of the requested land size in different regions (% of total land size)



Oromia and Amhara regions dominate all other regions (with almost equal share) in terms of the total land requested by investors in recent years. These regions account for about 70% of the total land requested during the PASDEP and the early-GTP periods. Other notable regions are Benishangul-Gumuz, Gambella, and SNNP regions which contribute almost equal shares of 8% to the pool. Oromia region takes the lion’s share in terms the size of land requested during the early-GTP period. It accounts for about 41% of the total land requested during this time whereas Amhara, Gambella, and Benishangul-Gumuz take consecutive ranks with 19.7%, 18.3% and 10%, respectively.

The PASDEP period is also dominant in terms of the number of projects corresponding to different investment categories classified based on project outputs (Figure 3.17). The share of investment projects approved during the

PASDEP period is the highest for the category of forestry (73.5%). For other investment categories, the following percentage figures were computed: livestock production (63.3%), horticulture (66.7%), and mixed agriculture (63%). Merging the PASDEP and the early-GTP periods yields a similar pattern of percentage figures across the above investment categories but with the highest addition to the projects under the category of mixed agriculture (18%).

Figure 3.17: Comparison of the five periods in terms of number of projects approved for different investment categories (% of total number)

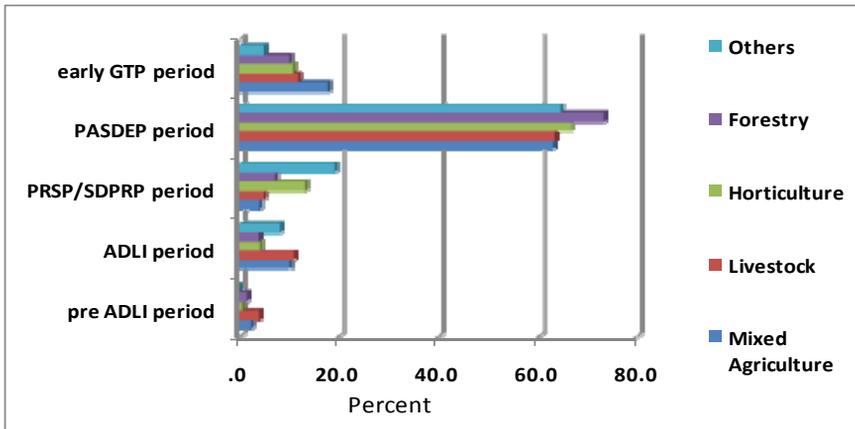
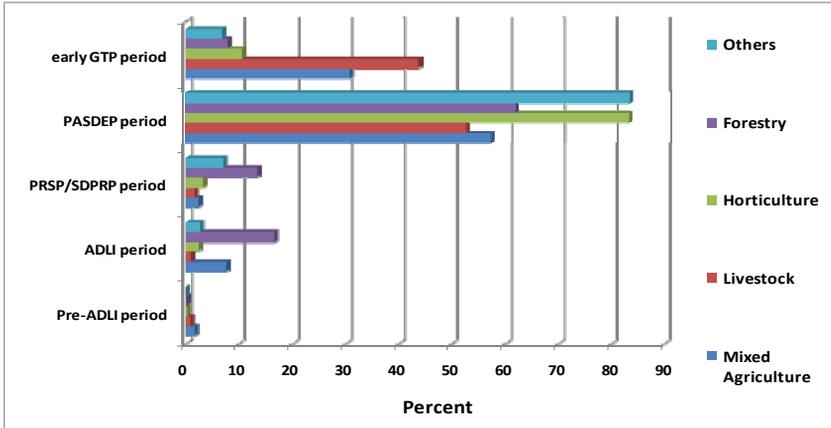


Figure 3.18: Comparison of the five periods in terms of the requested land size for different investment categories (% of total land size)



Most of the investment projects approved either during the PASDEP period or during the early-GTP period were within the category of mixed agriculture. These projects account for about 56% of the total number. Projects in the category of mixed agriculture are even more dominant over the others during the early-GTP period (66.7%).

Analysis with respect to the area of land requests reflects a similar pattern. The PASDEP period is by far dominant over the others in terms of all categories of investment. The highest share of the PASDEP period corresponds to the category of horticulture (83%) and others (83%) whereas its least share corresponds to the category of livestock (52%). On the other hand, about three-quarters of the land requested during the PASDEP period or thereafter corresponds to the category of mixed agriculture. During the early-GTP period, the category of mixed agriculture is even more important accounting for about 86% of the total land requested for commercial agriculture.

3.8 The Current Statuses of the Investment Projects

The data on the current statuses of the investment projects is not complete. Regions lack capacities to undertake a complete audit of the approved investment projects. In none of the regions we could access a complete data on the size of land transferred to the investors. Nor could we access data on the actual operational land of the investors. Some regions, such as Oromia and Amhara, have started the process of auditing investments in commercial agriculture but they didn't complete such tasks until data collection for this report was completed. Therefore, the discussion in this section may provide a highlight on the statuses of the investment projects discussed so far, but may not provide a complete picture.

The results show that less than one-third of the investment projects are on the production stage. The majority are either on the lower stages of development (i.e. pre-implementation and implementation) (41.7%) or their statuses are not known (24%). A few others (i.e. about 6%) are not functional. There exists distinct variation across regions in this regard (Figure 3.19). The majority of the projects in Tigray (79.6%), Somali (62.5%), Harari (60%), and Benishangul-Gumuz (52.7%) were reported to be on the production (operational) stage. On the contrary, only 4% of the projects in Gambella were recorded as operational. The share of projects on the production stage in other regions range from 18.5% in Afar region to 38.2% in Addis Ababa. The statuses of 95% of the investment projects in Gambella are not known. The same holds true for 69.1% of the projects in Afar and 49.6% in Oromia. For other regions records related to this variable are, by and large, complete.

Figure 3.19: Percent projects on different status in terms of number

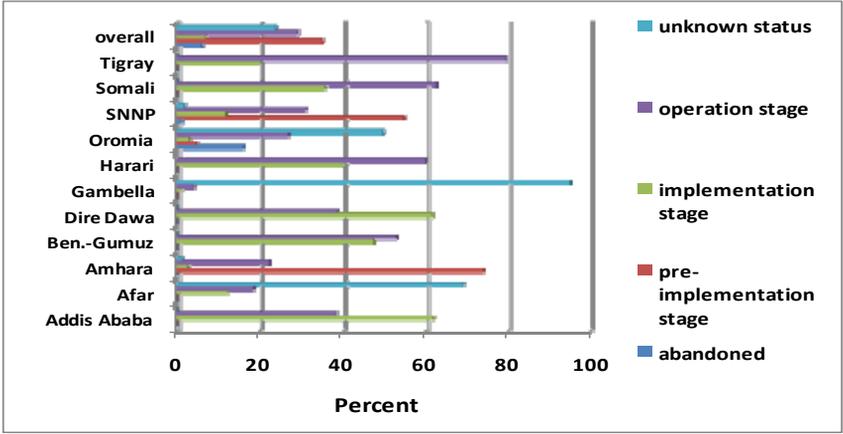


Figure 3.20: Percent projects on different status in terms of area of land requested

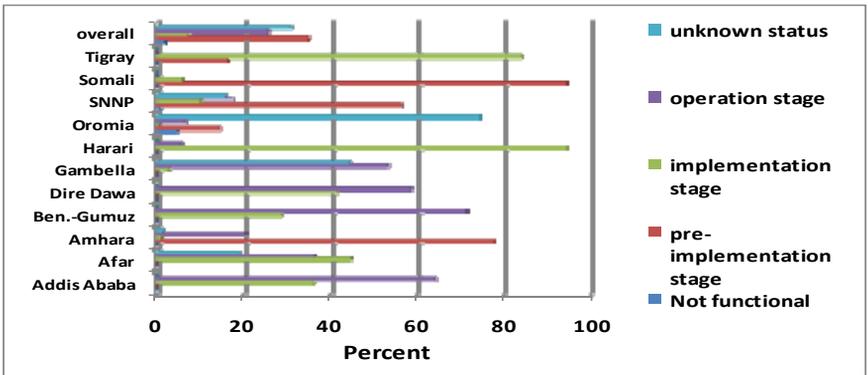


Figure 3.20 displays the statuses of the investment projects vis-à-vis the area of land requested. It shows that about 26% of the land requested is associated with projects which are operational and about 35% is associated with projects at their initial stages of development (i.e. pre-implementation stage). A

substantial proportion of land (i.e. about 31%) is associated with projects having unknown status. Regions have different positions vis-à-vis the statuses of the approved investment projects, in this case too. About three-quarters of the land requested in Oromia correspond to projects with unknown status. This is equivalent to about 25% of the total land requested in all regions. The next in this case is the Gambella region with 44.2%. The size of land associated with operational projects in Tigray, Benishangul-Gumuz, Addis Ababa, and Gambella are 83.7%, 71.3%, 63.9, 58.6% and 53.1% in that order. On the other hand, large proportions of the land in Amhara (77.6%) and SNNPR (56.2%) are associated with projects at their initial stages of development.

Only about one-third of the projects in the category of mixed agriculture are operational. These projects account for 26.8% of the total land requested for mixed agriculture. For the categories of livestock, horticulture, and forestry, operational projects constitute 19.8%, 26.9%, and 37.4%, respectively. In terms of the area of the land requested, the share of operational projects in the categories of livestock, horticulture, and forestry are about 7%, 15%, and 51%, respectively. The statuses of about 33% of projects in the category of horticulture are not known. This is the highest of all categories in this regard and is followed by livestock (32.2%), mixed agriculture (16.8%), and forestry (16.1%). In terms of the area of land requested, projects in the category of livestock are the least known (61.8%) followed by horticulture (50.5%), forestry (30.8%) and mixed agriculture (25%).

3.9 Commercial Farms Vs Smallholder Farms

There exists a shortage of data on commercial farms that help compare and contrast commercial and smallholder farms in terms of changes in total cultivated land and production. The Central Statistical Agency (CSA) conducted

more than five surveys on commercial agriculture between 2001/2 and 2010/11. However, it could produce reports for only three surveys (2002/3, 2008/9, 2010/11) for various reasons mainly due to unwillingness of respondents to give accurate information (CSA 2009). This section is based on the recent two successful CSA surveys conducted in 2008/9 and 2010/11 and the other two surveys on smallholder agriculture corresponding to similar years.

Commercial farms could cultivate about 616,463 ha of land during 2010/11 meher season. This was higher than the figure corresponding to 2008/9 meher season by about 79% which indicates an average annual growth of 39%. The highest jump in the total cultivated area was observed for vegetables and root crops (74.5% per year) while the lowest was observed for permanent crops (9.5%). In fact, the growth in the area of cultivated land is quite low as compared to the growth in the total land requested for commercial crop production during the years before 2008/9. For instance, the total land requested for crop production (including grain crops and vegetables and root crops, and permanent crop) increased by about 428% per year between 2005/6 and 2008/9 which is far higher than the growth in the actual cultivated land. The divergence of the total cultivated land and the total land requested for commercial crop production can be associated, among others, with total or partial project failures, long time lags to start production, small size of the cultivated land as compared to the size of the requested land, and small size of the approved land as compared to the size of the requested land. Similarly, the total crop production increased from about 3.3 million metric tons in 2008/9 to about 4.6 million metric tons in 2010/11 which shows a 20% average annual growth rate. The highest growth rate was observed in vegetables and root crops (287.2% per year) while the lowest was observed for permanent crops (12.9%).

The faster growth rate observed in the size of cultivated land among commercial farms as compared to that of the total production indicates that these farms paid more attention to extensification than intensification. The result implies that large potential operational lands exist among commercial farms relative to the cultivation capacities of the investors, and that total production would potentially increase in the course of time even if the total land under commercial agriculture remains the same as the farms improve capacities to intensify.

Commercial agriculture showed a remarkable change both in terms of the area of cultivated land and the total production between the selected years (2008/9 and 2010/11) as compared to smallholder agriculture. The annual growth rate of the total cultivated land by smallholders during this period was about 3.4% while that of the total production was about 12.3%. Both figures are substantially lower than the corresponding figures for commercial farms discussed above.

Despite a remarkable growth of commercial agriculture in recent years, smallholders remain the dominant players in Ethiopian agriculture. For instance, smallholders accounted for 95.6% of the total cultivated land during the main season of 2010/11 and accounted for 84.8% of the total production. Smallholders were dominant in all categories of crops with the exception of permanent crops.

A considerable difference is observed between the two categories of farms in terms of cropping patterns or crop choices. Although grain crops were dominant in both categories of farms, the degree of dominance was lower by 15 percent for commercial farms. On the contrary, the share of permanent crops among commercial farms was higher (by about 15%) than that of smallholder farms. Perhaps, this is because of the fact that most permanent

crops (such as coffee and fruits) in Ethiopia are mainly produced for sale. Vegetables and root crops had equivalent shares in both commercial and smallholder farms.

Table 3.4: Area under different crops and production for commercial farms as compared to smallholders (Meher 2010/11)

	Area of land (,000ha)			Production (,000 metric ton)		
	Commercial farms	Smallholder farms	Share of commercial farms (%)	Commercial farms	Smallholder farms	Share of commercial farms (%)
Grain crops	452.244	11,822.786	3.7	932.74	20,348.53	4.4
Vegetable & root crops	14.537	341.022	4.1	249.74	2,591.17	8.8
Permanent crops	149.681	1,104.903	11.9	3,458.57	2,970.61	53.8
Total	616.463	13,268.711	4.4	4,641.06	25,910.3	15.2

Source CSA, 2011a, and 2011b

Average production per hectare among commercial farms varies from 4,800 kg/ha to 1,448 kg/ha for cereals, from 2,371 kg/ha to 1,162 kg/ha for pulses, and from 1,799 kg/ha to 654 kg/ha for oil crops. The most productive grain crops are maize, field pea and safflower while the least productive ones are teff, lentils, and Niger seed (neug) within their respective categories. The highest and the lowest productions per hectare were obtained for head cabbage (30,205 kg/ha) and red peppers (3,598 kg/ha) in the category of vegetables and root crops. Papaya was the most productive in terms of biomass among fruits whereas guava was the least; but sugar cane yield the highest among all permanent crops with the average biomass yield of 144,360 kg/ha.

Compared to smallholders, commercial farmers are better in terms of land productivity in all crops. On average, commercial farms are more productive

by about 34% than smallholder farms. However, the gap is not uniform across the three categories of crops. It is relatively small with regards to grain crops but is relatively large for the other two categories (Table 3.5). If all types of crops are given equal weights, the highest productivity gap is about 128% which corresponds to the category vegetables and root crops. Productivity gaps become as high as 748% (corresponding to the permanent crop category) if weighted averages are used to compare the two categories of farms. Differences in the average values (and the resultant productivity gaps) imply differences in cropping patterns between commercial farms and smallholder farms.

Table 3.5: Productivity of commercial farmer and smallholder farmers (Kg/ha)

Crop categories	Commercial farms		Smallholder farms		Difference in productivity (%)	
	Non-weighted (A)	Weighted (B)	Non-weighted (C)	Weighted (D)	Non-weighted $100*(A-C)/C$	Weighted $100*(B-D)/D$
Grains	1,922	2,062	1,543	1,721	24.5	19.8
Vegetables & root crops	19,391	20,444	8,494	7,561	128.3	170.4
Permanent crops	18,372	22,800	10,324	2,688	78	748.2
Total	13,228	2,650	6,787	1,975	94.9	34.2

Note: The weight for each crop is its share in terms of area coverage within its category during meher season of 2011.

Source: Computed based on CSA, 2011a and CSA, 2011b

As might be expected, commercial farms used higher levels of commercial inputs than smallholder farms. On average, commercial farms applied 146 kg/ha of chemical fertilizers (Urea and/or DAP) which was higher by about 35% than smallholder farmers (Table 3.6). Moreover, the share of land to which chemical fertilizers were applied was higher among commercial farms

than smallholder farms. Commercial farms were better than smallholder farms also in terms of the share of land cultivated with improved seeds. They could cover 18.3% of their cultivated land with improved seeds while smallholder farmers could cover only 5.6%. The higher quantity of chemical fertilizers used per hectare and the higher share of improved seeds among commercial farms might have contributed to the superior performance of commercial farms in terms of land productivity as compared to smallholder farms.

Table 3.6: Use of Chemical Fertilizers among Commercial Farms and Smallholder Farms

	Commercial Farms	Smallholder Farms
Share of area covered (%)	43.9	34.4
Quantity per total cultivated land (Kg/ha)	64	40
Actual rate (Kg/ha)	146	108

Source: Computed from CSA, 2011a and CSA, 2011b

3.10 Summary and Conclusion

This chapter tries to provide an overall picture of commercial agricultural investment initiatives in the country after the regime change in 1991. The results are based on the data collected from various government offices (such as Ethiopian Investment Commission, Ministry of Agriculture, and regional investment offices). Our data set contains 7,110 cases of investment projects recorded in different regions of the country and the two city-administrations (i.e. Addis Ababa and Dire Dawa) which were approved or reorganized since 1992 until the end of 2011. In addition to the data collected from the above sources, CSA reports were used to prepare the report.

The aggregate area of land requested for all investment projects under our analysis was about 5.5 million hectares. There is a considerable variation among regions in terms of the distribution of farmlands requested by investors. Oromia region stands first in terms of the aggregate area of the land requested for agricultural investments accounting for about 34% of the total land and is closely followed by Amhara region (32.9%). The other important regions in terms of the aggregate size of land requested of commercial agriculture are Benishangul-Gumuz region (10.7%), SNNPR (8.1%) and Gambella region (7.7%).

Investments were initiated in the areas mixed agriculture, livestock production, horticulture, forestry and related activities, and others. Investment projects within the category of “mixed agriculture” are highly dominant over the others in terms of number and accounts for about 56% of the total. The categories of “livestock production” and “horticulture” accounts for 22.3% and 18.1% respectively. Projects in the other two categories had quite a small share (i.e. about 4% together). Differences are visible among regions with regards to the distribution of investment projects in different categories. Livestock enterprises are dominant in Addis Ababa, Dire Dawa, Harari, and Oromia. In all other regions mixed agriculture is the most important.

The majority of the approved investment applications (80.5%) were made by domestic investors; foreign investment projects and joint ventures constitute only 19.5% of the total number. In terms of the total area requested, the share of domestic investments is not as high as their percentage share of the total number of agricultural investment projects licensed in the country. In this case, the share of domestic projects is 55.8% while that of foreign projects is 40.1%. The difference can be explained by the larger average land requested by foreign investors.

The contributions of the investment projects to employment were also assessed based on the information provided by the investors during applications. The result shows that a farm would generate employment for about 7 people per hectare. However, there are differences among different categories of farms with regards to the level of employment generation. Small farms generate the highest employment per hectare (i.e. 15.5 persons) while large farms generate the lowest (i.e. 0.5 person). Projects in livestock production are the most labour intensive; they can generate employment for about 17 people per hectare of investment. Horticulture and forestry are the next labour intensive categories of investment whereas mixed agriculture is the least. The average employment generation capacity of investments which combine production and processing is 17.3 people per hectare. This is substantially higher than the mean figure of those projects which do not process their products (i.e. 6.5 people per hectare).

The trend of investment applications have been increasing overtime since 1992 both in terms of the number of projects approved and area of land requested but with irregularities. A kind of trough was observed between 1997 and 2002 which might be due to the Ethio-Eritrean war and a serious drought which might have affected the expectations of potential investors and also diverted the attention of the government from investment promotion to disaster management and national security. But a positive and continuous growth was observed in the number of investment projects approved between 2003 until 2008. The growth was so dramatic between 2007 and 2008 which can be attributed to extensive investment promotions made by the government during the Ethiopian Millennium celebrations. However, the number of licensed projects has sharply declined after 2008 and has continued declining during the early GTP period. It seems that regional governments (as well as the Federal government) have opted for a “stop-and-see” strategy

after extensive license provisions to potential commercial farmers between 2003 and 2008.

The majority (64.3%) of the investment projects were licensed during the PASDEP period. The PASDEP period (2005-2009) and early GTP period (2010-2011) together account for about 80% of the total projects. The share of the PASDEP period is about 62% with regards to the total area of land requested for commercial agriculture and that of the early GTP period is about 26%. Land requests during the three pre-PASDEP periods (1992-2004) constitute a small proportion of the total requests during the entire period (1992-2011).

While the figures discussed in this report provide a general picture of the demand for commercial agriculture, the current statuses of a quarter of the investment projects have not been recorded. Moreover, only one-third of the projects were reported to be at production stage while the majority are on the lower stages of development (i.e. pre-implementation and implementation) (41.7%).

Compared to smallholders, commercial farmers are better in terms of land productivity in all crops. On average commercial farms are more productive by about 34% than smallholder farms. The gap is not uniform across different categories of crops namely, grains, vegetables and root crops, and permanent crops. The gap is relatively small with regards to grain crops while it is relatively large for the other two categories. If all types of crops are given equal weights, the highest productivity gap is about 128% which corresponds to the category of vegetables and root crops. Productivity gaps become as high as 748% (corresponding to the permanent crop category) if weighted averages are used to compare the two categories of farms. Differences in the

average values (and the resultant productivity gaps) imply differences in cropping patterns between commercial farms and smallholder farms.

Finally, there exists a shortage of data on commercial farms that help compare and contrast commercial and smallholder farms in terms of changes in total cultivated land and production. It seems that CSA has given a little attention to commercial farming until now perhaps due to the fact that the share of this sub-sector was quite small in the past. However, situations are changing over time and commercial farms are remarkably growing in terms of the size of cultivated land and the volume of production in recent years. Therefore, the agency should plan for annual sample surveys for commercial farms in addition to the annual agricultural sample surveys which targets only smallholder agriculture.

Chapter Four

Performance of the Manufacturing Industries: Comparative Analysis of Export Focused Sub- Sectors

4.1 Introduction

The focus of this year's manufacturing sector report is on assessing the performance of export focused sub-sectors. This report is prepared after a year and half has elapsed implementing the five-year Growth and Transformation Plan (2010/11--2014/15). The assessment was made by comparing SDPRP (2001/02-2004/05) end year performance with the PASDEP (2005/06-2009/10) period average achievements. It also tried to compare GTP's first year (2010/11) performance with PASDEP period average when data allows.

4.2 GTP and the Manufacturing Industries²⁷

The Growth and Transformation Plan (GTP) gives emphasis for the expansion and development of Large and Medium Scale Manufacturing Industries (LMSMI). The strategy focuses on industries that are labor intensive, have broad linkage with the rest of the economy, use agriculture output as inputs, export oriented and import substituting, and contribute to rapid technological transfer.

²⁷ This section draws on MOFED. 2010. Growth and Transformation Plan (2010/11-2014/15), November 2010.

Of the Medium and Large Scale Manufacturing Industries, the plan gives emphasis to the following key industries: Textile and garment; Leather and leather products; Sugar and sugar related; Cement; Metal and engineering; Chemical industry; Pharmaceutical and Agro-processing industries.

The development objectives of the industrial sector, according to GTP, are to create a broad-based spring-board for competitive domestic industrial and private sector development; create employment opportunity and reduce poverty; support sustainable development of agriculture; increase industrial production and productivity by fully utilizing the existing capacity of industries; promote industries which use domestic raw materials and labor; create strong foundation for the sector to start playing leading role in the national economy, employment, foreign exchange earnings and savings; and strengthen the sector's capacity to producing equipments, machinery and spare parts.

Of the eight priority industrial sub sectors identified, the following are given key role to play in the export sector along with foreign exchange target by the end of 2014/15:

- Textile and garment: export target of USD 1 billion;
- Leather and leather products: target USD 496.5 million;
- Cement industry: no export target ;
- Pharmaceutical: USD 20 million ; and
- Agro-processing: USD 300 million.

This report is not in a position to assess the performance registered in manufacturing sector during the first GTP implementation year due to lack of data.

Overall, the plan looks so ambitious in its various facets including the number of new industries it planned to establish, to expand and the amount of foreign

exchange it planned to generate and/or save. A number of challenges will come into play in making the plan not to meet the targets. Among the challenges financing problem including the foreign exchange components and shortage of trained and experienced manpower to shoulder the technology transferring task are the major ones.

4.3 Structure and Growth of GDP

Since 2008/09 service sector took the leadership position accounting for about 45.1 percent of the total GDP, while agriculture and industry accounted for about 43.1 percent and 13.0 percent, respectively. Since then the dominance of the service sector has continued, agriculture declining slightly while industry remained at more or less the same level. Within industrial sector, except the share of small scale and cottage industries (which declined from 1.8 percent in SDPRP end year to 1.4 percent in GTP implementation first year), the shares of all the other sub-sectors have remained at the SDPRP end year level (Table 4.1). Despite the emphasis for the manufacturing industries, no significant structural change has been witnessed so far.

During the PASDEP period, service sector GDP has been growing at faster rate than industrial sector which, in turn, has been growing at a bit faster rate than agriculture sector. The real GDP growth rate in the first year of GTP implementation period is a bit higher than PADSEP period average. While agriculture and industry sectors have shown better growth performance in 2010/11, service sector registered lower rate compared with the PASDEP average (Table 4.1).

Table 4.1: The Structure and Growth of the GDP, by major sectors

Sector	share in %			Growth in %	
	SDPRP Last year, 2004/05	PASDEP, period average	GTP 1st year, 2010/11	PASDEP, period average	GTP 1st year, 2010/11
Agriculture	47.4	44.6	41.1	8.4	9.0
Industry	13.6	13.1	13.5	10.06	15
Mining and Quarrying	0.4	0.4	0.7		
Manufacturing	5.2	5.0	5		
Large and Medium Scale Manufacturing	3.4	3.4	3.6		
Small Scale and Cottage Industries	1.8	1.5	1.4		
Electricity and Water	2.2	2.0	1.9		
Construction	5.8	5.7	5.9		
Services	39.8	43.3	46.5	14.4	12.5
Total	100.8	101.1	101.1		
Less: FISIM	0.8	1.1	1.1		
GVA at Constant Basic Prices	100	100.0	100	11.02	11.4

Source: MOFED, www.mofed.gov.et retrieved on May 10, 2012

4.4 The Performance of Export-focused sub-Sectors

Compared with developed countries, the share of manufactured export in the total merchandize export receipts of LDCs, like Ethiopia, is meager. According to the World Bank (2009), the share of Ethiopia’s manufactured exports in the total merchandise export receipts is estimated at 9 percent in 2009. The degree of sophistication and technological contents of exports of Ethiopia are very minimal for it largely exports merely processed primary agricultural commodities.

The manufactured exports of the country are concentrated in few agro-processing industries. The low export share in the total sales indicates that the bulk of the production is channeled to domestic market. The share of exports in the total sales of LMSMI has declined from 9.1 percent in 2005/06 to 3.03 percent in 2009/10. The share varies from one sub-sector to the other. During PASDEP period, leather tanning, dressing, footwear, and luggage sub-sector, on average, has generated more than half of its total sale revenue from the exports market. It is distantly followed by wearing apparel and textile subsectors, generating respective share of 13.1 percent and 11.4 percent (Table 4.2).

Of the total receipts from manufactured exports, the contribution of the four export focused sub-sectors is substantial. The four sub-sectors, on average, have contributed for about 95.8 percent of the total manufactured export receipts of the country in PASDEP period average. The trend, however, continued to decline from 98.7 percent in 2005/06 to 88.5 percent in 2009/10. Compared with the SDPRP end year figure of 99.7 percent, the PASDEP end year performance went down to 88.5 percent indicating diversification into other sub-sectors (Annex 4.1).

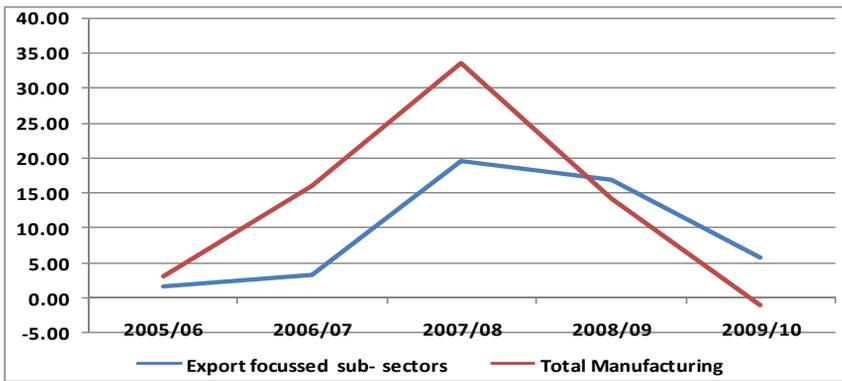
4.4.1 Number and Scale of Industries

Trends in the number of enterprises in the different sub-sectors would help to see to which sub-sectors investors showed their interest and from which they are shying away. According to CSA, about 35.8 percent of LMSMI are in the four exports focused sub-sectors. This figure is less than the one registered in 2004/05 (41.5 percent) indicating a more than proportionate increase in the number of enterprises joining the non-export focused sectors. Despite the provision of generous support to export oriented industries, investors have not been seen joining the sector as expected due to variety of

reasons. These may include the difficulty to penetrate and compete in the global market, the shortage of finance to establish large export focused industries and the attractiveness of import-substituting industries as it also benefits from the due government support.

Except for the year 2009/10, the registered growth in the number of enterprises has been positive. The PASDEP period average growth and the SDPRP end year growth performances are not that different. This shows that PASDEP has not performed differently in increasing the number of enterprises joining the sector. The growth in the number of export focused enterprises is less than the industry average (Figure 4.1).

Figure 4.1: The Number of Manufacturing industries, Growth in %



Source: CSA, various issues

The number of employees per manufacturing enterprise indicates the scale of the enterprise. According to the data, the number of workers per enterprise in the export focused sub-sectors, on average, is 128.25. This is greater than the average number of employee per enterprise observed in the whole

manufacturing sector, 81.75. This shows that the export focused sub-sector is larger in scale than the non-export sub-sectors (Table 4.2).

Table 4.2: Number of Employees per Manufacturing Enterprise

No.	sub-sectors	SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1	Food Products & Beverages	85.66	95.60	120.94	85.08	79.99	105.09	97.34
2	Textiles	517.53	526.19	529.32	482.27	382.93	534.55	491.05
3	Wearing Apparel, Except Fur Apparel	89.86	132.23	237.63	195.21	190.07	183.18	187.66
4	Leather tanning, dressing, Footwear, Luggage & Handbags	127.63	125.62	115.99	103.45	98.31	93.92	107.46
5	Export sub-total(1+2+3+4)	125.57	137.08	159.20	108.23	106.08	130.68	128.25
6	Total	90.43	95.31	93.59	67.66	66.97	85.21	81.75

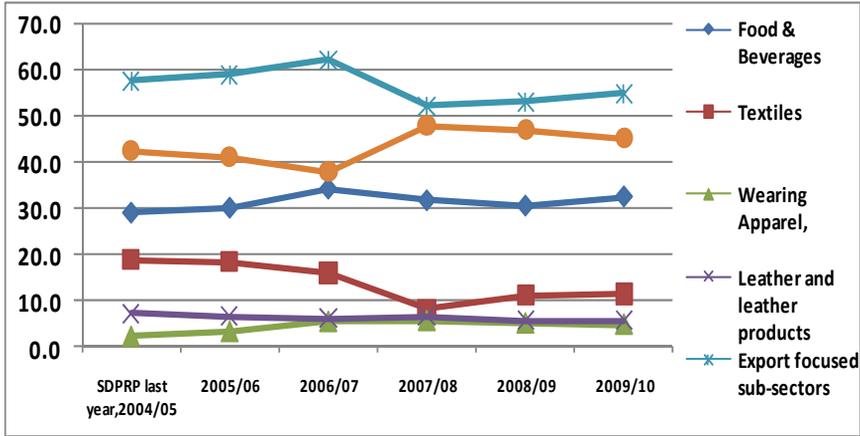
Source: CSA and own Computation

4.4.2 Employment and Wage

Employment

In general, the size of employment has slightly increased over the period 2005/06-2009/10. The higher share of employment is in the food and beverage sub-sector, followed by textile and other non-metallic mineral products. However, the share of food and beverage has been increasing while that of textile has been declining over the period under review (Figure 4.2).

Figure 4.2: Employment by sectors, Share (in %)



Source: CSA and own Computation

The employment situation in a sector reflects the performance of that sector. Well-performing enterprises hire more workers than badly performing ones. According to the data, the overall manufacturing sector has registered an average annual growth of 11.5 percent. Similarly, the export focused sub-sectors have shown similar growth rate over the same period indicating absence of variation between the two sub-sectors in terms of employment generation (Table 4.3).

Table 4.3: Employment, growth in %

No. Sub-sectors	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1 Food Products & Beverages	12.5	29.2	-10.4	8.9	33.7	14.8
2 Textiles	6.8	-1.8	-51.1	55.2	29.9	7.8
3 Wearing Apparel, Except Fur Apparel	57.3	85.5	0.1	2.4	19.9	33.0
4 Leather Tanning, dressing, Footwear, Luggage & Handbags	0.0	5.5	2.8	1.9	22.4	6.5
5 Export sub-total(5=1+2+3+4)	10.9	20.0	-18.7	14.5	30.2	11.4
6 Total	8.5	13.9	-3.5	13.0	25.7	11.5

Source: CSA and own Computation

Wage

Real wage in manufacturing sector has been declining dramatically until 2008/09. It, however, picked up in 2009/10. In 2004/05, the real wage for the manufacturing industry workers averaged at Birr 9.5 thousand after 5 years in 2009/10 it remained at Birr 9.5 thousand. With respect to export focused sectors, the real wage per worker has declined to Birr 7.3 thousand in 2009/10 from Birr 10.4 thousand in 2004/05 indicating a deteriorating real income of workers and hence their living condition. The real wage per employee in the export sector has been lower than the industry average for all the years except 2006/07. This shows that export focused sector pays less than the manufacturing industries average. This may result in migration of workers from export focused to other sub-sectors. This entails loss of experienced workers in the export sector where they are needed most (Table 4.4).

Table 4.4: Real Wage per Employee

No.	sub-sectors	SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1	Food Products & Beverages	10.9	9.1	11.0	7.8	7.2	10.2	9.1
2	Textiles	6.4	6.6	11.7	3.2	4.2	6.2	6.4
3	Wearing Apparel, Except Fur Apparel	3.8	3.6	7.5	5.6	3.8	7.3	5.6
4	Leather tanning, dressing , Footwear, Luggage & Handbags	10.4	9.5	7.8	6.1	5.4	7.3	7.2
5	Export focused sub sectors	9.0	8.0	10.3	6.4	6.0	8.7	7.9
6	Total Manufacturing	9.5	8.7	9.4	6.8	6.3	9.5	8.1

Source: CSA and own Computation

4.4.3 Investment in the Sector

Investment boosts the productive capacity of the sector. Investment may have been spent for replacing old machinery or expanding existing industries or establish new manufacturing industries. Of the total investment made during the PASDEP period, 58.6 percent found their ways into export focused sub-sectors. Within the export focused subsector, the largest share went to the food and beverage sub-sector absorbing slightly over 2/5th of the total investment in the whole manufacturing industry (Table 4.5).

Although fluctuations have been witnessed in terms of the growth in investment, the growth registered in the export focused sector (44 percent) is higher than the industry average (38 percent) in the period 2005/06-2009/10. This was mainly due to huge investment flowing into the export focused public enterprises, particularly in textile industries (Table 4.6).

Table 4.5: Investment in the sector, share and growth (in %)

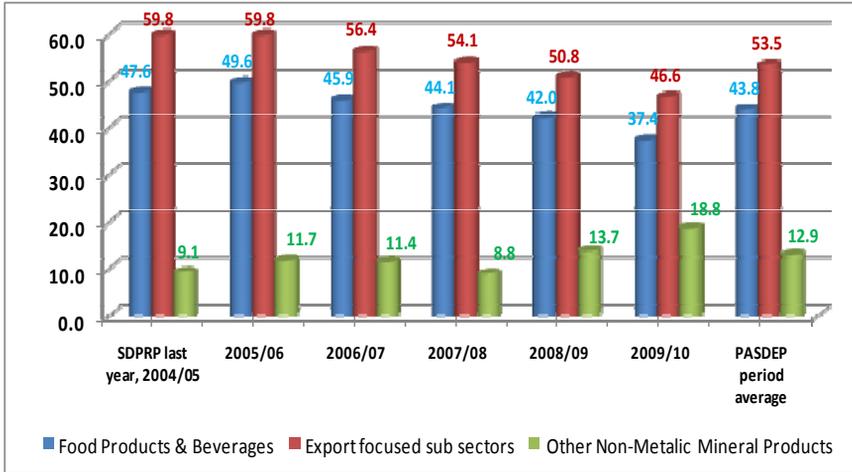
No.	Sub-sectors	Share in %		Growth in %
		SDPRP last year, 2004/05	PASDEP period average	PASDEP period average
1	Food Products & Beverages	42.09	41.8	30.0
2	Textiles	10.03	7.1	963.0
3	Wearing Apparel, Except Fur Apparel	1.16	3.0	121.0
4	Leather tanning, dressing, Footwear, Luggage & Handbags	9.71	6.7	36.0
5	Export sub- total(5=1+2+3+4)	62.99	58.6	44.0
6	other sub-sectors	37.01	41.43	
7	total industry			38

Source: CSA and own Computation

4.4.4 Production Performance

Value Added (VA) shows the contribution of the manufacturing sector to the overall economy. According to the data, though it has been declining over time due to the decline in the food and beverage, export sector generates over half of the total Value Added generated in the total manufacturing sector. The food and beverage sub sector alone generated about 44 percent of the sector's Value Added (Figure 4.3). This shows that the Value Added of the sector is concentrated in a single sub- sector (food and beverage).

Figure 4.3: Value Added (Share in %)



Source: CSA

Except for the relatively lower rate registered in 2007/08, the growth in the Value Added of the sector have been remarkable. The average growth registered in the PASDEP period is higher than that of the SDPRP end year achievement. Export focused sector has registered an average growth rate of 12.1 percent per annum in the review period but is less than the overall industry average (18 percent) indicating the superior performance of non-export import substituting industries (Table 4.6).

Table 4.6: Value Added in the Manufacturing Sector, growth in %

No.	sub-sector	SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1	Food Products & Beverages	-11.17	18.93	8.84	2.35	15.59	15.91	12.32
2	Textiles	-13.16	5.49	17.51	11.80	-14.28	44.76	13.06
3	Wearing Apparel, Except Fur Apparel	10.06	56.45	9.46	-29.05	23.67	218.90	55.88
4	Footwear, Luggage & Handbags	23.80	-21.96	28.42	-3.98	33.73	6.20	8.48
5	Export focused sub-sector	-8.72	14.09	10.91	2.34	13.83	19.52	12.14
6	Total	-3.45	14.08	17.57	6.73	21.20	30.30	17.98

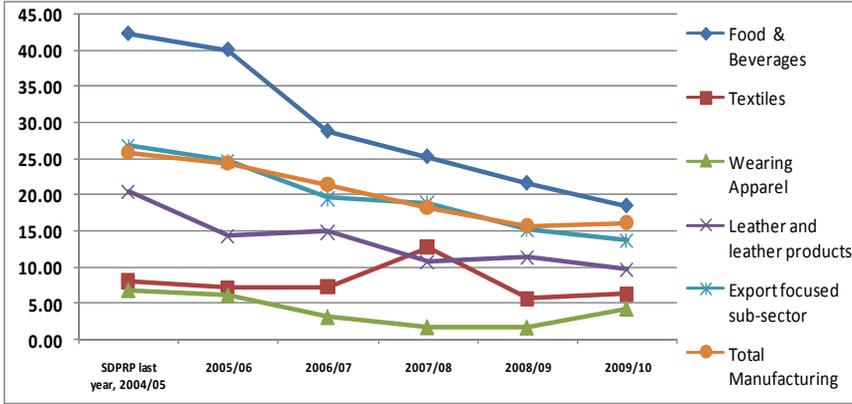
Source: CSA and own Computation

4.4.5 Labor Productivity and Production Efficiency

4.4.5.1 Labor Productivity

Labor productivity measured by real Value Added per worker has been declining over the period 2004/05- 2009/10. The decline witnessed in the overall sector is the same as the decline observed in the export focused subsectors. Within the export sector, textile and wearing apparel has remained more or less at the same level of productivity over the period. The productivity in the food and beverage and leather and leather products have declined by more than one fold. The productivity in the export focused subsectors has reduced to half in 2009/10 from its level in 2004/05 (Figure 4.4).

Figure 4.4: Real Value Added per Worker²⁸, in 000 Birr

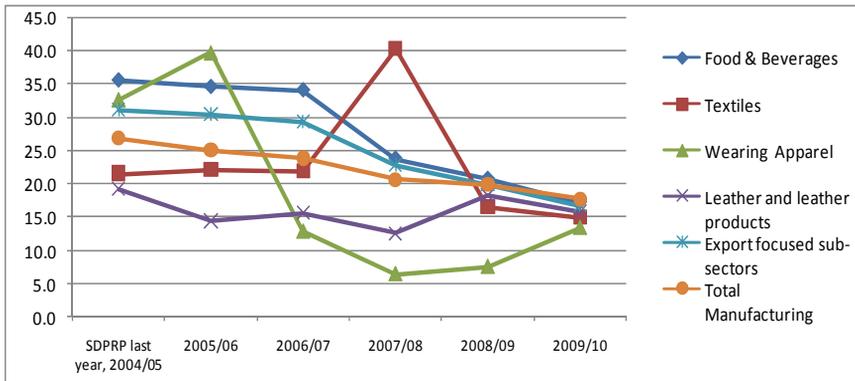


Source: CSA and Own Computation

4.4.5.2 Production Efficiency

VA/GVP, the measure of production efficiency, has been declining over time. However, the efficiency witnessed in the export focused sub-sectors better than the one observed in the non-export sectors. Within the export focused sub-sectors, leather and leather products has registered the least efficiency, generating Value Added of slightly higher than 1/6th of GVP. This shows that value added to the sub-sector to be extremely lower (Figure 4.5).

²⁸ Real value added is obtained by deflating value added of the manufacturing sector by GDP deflator.

Figure 4.5: Value Added per GVP, by sub sector

Source: CSA and own Computation

Capital Intensity

In theory, labor abundant countries use labor intensive techniques of production while capital abundant countries capital intensive techniques of production. As labor abundant country, Ethiopia is expected to pursue labor intensive techniques of production. However, the global situation is not in favor of this strategy. Besides, evidences show that capital intensive manufacturing industries have higher competitive advantage over labor intensive ones.

Contrary to the endowment of the country, capital intensity has been rising in the sector over the review period. It has increased from birr 59.1 thousand in 2005/06 to birr 83.9 thousand in 2009/10. The intensity, however, varies from one sub-sector to the other. Export focused sectors has less capital per worker than the overall industry average implying the presence of higher labor intensity in export sector compared with non export focused ones. Within the export focused sub-sector, wearing apparel is highly labor intensive while food and beverage is less labor intensive. The question is

whether the labor intensive export sector of the country can compete with capital intensive industries producing for export market (Table 4.7).

Table 4.7: Capital Intensity (capital stock/employee ratio)

No.	Sub-sectors	SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1	Food Products & Beverages	75.9	75.3	54.7	88.5	85.9	77.3	76.3
2	Textiles	32.2	31.6	27.8	56.9	41.7	82.4	48.1
3	Wearing Apparel, Except Fur Apparel	14.6	12.7	38.6	38.6	71.6	58.0	43.9
4	Leather Tanning, dressing, Footwear, Luggage & Handbags	63.4	62.3	71.7	70.8	72.1	77.8	71.0
5	sub total	57.4	56.3	47.9	75.7	73.6	76.7	66.0
6	Total	60.6	59.1	55.3	65.0	71.0	83.9	66.8

Source: CSA and own Computation

Import Intensity

In the move towards industrialization, countries are advised to promote manufacturing industries in which they have comparative advantage and which greatly depend on domestic resources. According to the data, Ethiopian manufacturing industries are import-intensive for raw materials and intermediate inputs. The overall import-intensity has been trending upwards but slightly declined in 2009/10. The overall import intensity of the sector rose to 51 percent in 2009/10 from 50 percent in 2005/06 .It, nonetheless, varies from one sub-sector to the other. Compared with the industry average, export focused subsector has shown lower import intensity indicating their higher dependence on domestic inputs for their production activities. Within export focused sector, leather and leather products subsector is the least

import dependent while wearing apparel is the highest import intensive sub-sector (Table 4.10),

Table 4.8: Import Intensity in the sector

No.	Sub-sectors	2005/06	2006/07	2007/08	2008/09	2009/10
1	Food Products & Beverages	0.206	0.238	0.279	0.311	0.248
2	Textiles	0.409	0.415	0.296	0.467	0.370
3	Wearing Apparel, Except Fur Apparel	0.312	0.527	0.373	0.349	0.503
4	Leather Tanning, dressing, Footwear, Luggage & Handbags	0.210	0.216	0.236	0.261	0.344
5	Export focused (5=1+2+3+4)	0.284	0.349	0.296	0.347	0.366
6	Total	0.495	0.583	0.536	0.527	0.510

Source: CSA and own Computation

Capacity utilization

There are some fluctuations in the overall capacity utilization witnessed in the industry. The average capacity utilization registered for the PASDEP period (60 percent) is slightly lower than the one registered in SDPRP end year (60.7 percent). Overall, capacity utilization is very low. The capacity utilization in the export focused sub-sector is slightly higher than the industry average. Within the export sub-sectors, capacity utilization is the highest in the food and beverage subsectors but the least in the Textile sub-sector with respective shares of 69.9 percent and 49.7 percent. A number of factors have been attributed to the low capacity utilization observed in the sector, the major being shortage of market and lack of raw materials (Table 4.9).

Table 4.9: Capacity Utilization

No	Sectors	SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	PASDEP period average
1	Food products and beverages	64.7	64.3	69.0	68.4	71.5	76.6	69.9
2	Textiles	46.6	22.7	26.1	58.6	62.6	78.6	49.7
3	Wearing apparel, except fur apparel	57.1	41.6	40.0	47.7	68.3	88.4	57.2
4	tanning and dressing of leather footwear, luggage and handbags	68.2	71.0	52.2	81.6	57.1	52.7	62.9
5	Export focuses subsectors	61.7	52.7	54.1	68.1	69.0	74.8	63.7
6	Total	60.7	55.2	55.4	53.8	67.4	68.3	60.0

Source: CSA and own Computation

4.5 Concluding Remarks

- Despite the focus to export oriented industries, investors have not been flocking into the sector.
- The number of workers per enterprise in the export focused sub-sectors is greater than the number of employee per enterprise observed in the whole manufacturing sector indicating the relative largeness of export focused enterprises.
- The real wage per employee in the export sector was found to lower than the average for the manufacturing industry as a whole. This shows that export focused sector pays less than the manufacturing industry average resulting in loss of trained and experienced workers.
- Though the number of export focused sectors is less than half, it generates more than half of the total Value Added generated in the manufacturing sector.

- Both labor productivity and production efficiency have been low and declining in the export focused sub-sectors.
- Workers in the export focused sectors have less capital to work with than the overall industry implying the presence of higher labor intensity in export sector.
- Compared with the industry average, export focused subsector has shown lower import intensity indicating higher dependence on domestic inputs for their production activities.
- The capacity utilization in the export focused sub-sector is slightly higher than the industry average. Within the export sub-sectors, capacity utilization is the highest in the food and beverage subsectors but the least in the textile sub-sector.

Chapter Five

Performance of the Higher Education Sub-Sector in Ethiopia

5.1 Introduction

Education in general and higher education in particular is considered as one of the most effective pathways out of poverty (Nwuke, 2008). Higher education provides a range of benefits for social and economic development. Bloom et.al. (2005) argue that higher education affects economic growth through private and public channels. The private channels include generating better employment opportunity, higher income, greater ability to save and invest, improved health, and better quality of life. Notwithstanding the fact that these personal gains also benefit the society as a whole, there are also public gains in terms of increased tax revenue, increased consumption, improve technology transfer, development of new tools and skills, entrepreneurship and job creation, as well as its spillover effect in terms of knowledge transfer to non-graduate co-workers.

But for several decades greater emphasis has been given to primary and secondary education and higher education received public attention only recently in Africa. Researchers argue that the contributions of higher education to growth and development have been under appreciated particularly by African countries. Higher education affects economic growth through a number of channels. These channels include research and development towards adapting to existing technologies and innovating new ones, improved competitiveness, better governance, teaching teachers for other levels of education and transforming structure of production. Previously studies put higher education in third position following primary and secondary education in terms of its returns to investment. As a consequence, the World

Bank and many African countries neglected the sector. But recently, the important role that higher education plays for achieving and sustaining growth has been recognized. As a result the sector has started to get the attentions that it deserved (Kimenyi, 2011; Diagne and Diene, 2011; Ajakaiye and Kimenyi, 2011).

Higher (tertiary) education in Ethiopia began in the 1950s with the establishment of Trinity College, which later become the Addis Ababa University College. The university college grew into the status of a university in 1961 with the formation of Haileselassie I University. Haileselassie I university was formed by organizing different colleges and institutions under the university. After the fall of the Imperial Regime in 1974, Haileselassie I university was renamed as Addis Ababa University (AAU). AAU started the first post-graduate programs in Ethiopia in 1978 (Amdissa 2009).

During 1974 to 1991 the military government Dergue ruled the country. Among the developments that took place during the Dergue was the ratification of a proclamation that established the Commission for Higher Education (CHE) in 1977. The proclamation repealed AAU's charter and transferred the responsibilities of the chancellor and the Board of Governors to CHE. The achievements of CHE in particular and the government in general include the establishment of new and specialized institutes in the areas of health science, water technology as well as management sciences (PMGSE 1983; Demissu 2008). These institutes include the Institute of Health Science in Jimma, Institute of Water Technology in Arbaminch and Technical Teachers College at Nazreth²⁹. The small semi-private institute that was run by a religious organization was also nationalized and upgraded into Asmara

²⁹ These institutes have been upgraded into universities by the current government.

University³⁰. In addition, Alemaya College of Agriculture was upgraded into an Agricultural University, Polytechnic Institute of Bahir Dar, Agricultural Vocational Schools at Jimma and Ambo, as well as Commercial School in Addis Ababa were upgraded into junior colleges (Demissu 2008).

Different units of Addis Ababa University were also opened during the Dergue period. The units include the Institute of Language studies, Faculty of Veterinary Medicine, Awassa College of Agriculture, College of Teachers Education in Bahir Dar, School of Information Studies for Africa and the School of Graduate Studies. Post-graduate programs were also started during this period. The government had also prepared feasibility studies for the establishment of three regional universities in Jimma, Awassa and Bahir Dar³¹ but failed to implement them due to lack of resources. The student population at the beginning of the period was around 11,000 for both full-time and extension students. This figure reached more than 29,000 (of which some 503 were graduate students) by the year 1989 (Demissu 2008).

Following the fall of the Dergue regime in 1991, the education sector went through major reforms. The Transitional Government of Ethiopia (TGE), which replaced the Dergue, introduced its Education and Training Policy (ETP) in 1994. Accordingly, the higher education sub-sector became open to the private sector (Amdissa 2009). As a result many private higher education institutes started operating in the sector. In this respect, the then Unity College (currently Unity University) became the first privately-owned institute of higher education in Ethiopia. In addition to opening the higher education sector to the private sector, the government also reorganized the existing different colleges and institutions of AAU into independent universities.

³⁰ Asmara University is located in Eritrea, which is separated from Ethiopia since 1993 as an independent nation.

³¹ They were implemented later by the FDRE government.

Despite more than fifty years history, the higher education sub-sector did not have a comprehensive Higher Education Proclamation for a long period of time. In fact, the first higher education proclamation was enacted in 2003. More recently, this proclamation has been revised and replaced by the Higher Education Proclamation of 2009.

5.2 Background

According to Wagaw 1990 (as cited by Saint, 2004), Ethiopian higher education institutions strove to maintain international standards. But the cost was high, with wastage rates approaching 40 percent in the late 1960s. He described their academic organization as somewhat more American and less British unlike most higher education systems in East Africa.

Following the down-fall of the imperial rule in 1974, the military government started heavy interference in the affairs of higher education institutes. These interferences included, among others, heavy security surveillance, repression of dissent, mandated courses on Marxism ideology, prohibition of student organizations, political appointment of senior university officers and control of staff academic promotions. As a result, the higher education system had been characterized by regimented management, conservative intellectual orientation, limited autonomy, shortage of experienced academic staff, declining educational quality, weak research output and poorly connected with the international higher education community (Saint 2004; Demissu 2008). In addition, the higher education institutions were few in number, overcrowded and located only in few places (FDRE 1994).

Following the over-throw of the Military government in 1991, the current government formulated and implemented The Education and Training Policy

(ETP) in 1994. The new policy states that educational management will be democratic, professional, coordinated, efficient and effective, and will encourage the participation of women. Furthermore, the policy stipulates that higher education institutions will be autonomous in their internal administration and in the designing and implementation of education and training programmes, with an overall coordination and democratic leadership by boards or committees, consisting of members from the community (society), development and research institutions, teachers and students. In this regard, higher education is expected to be research-oriented and enable students to become problem-solving professional leaders (FDRE 1994).

Prior to ETP education expenditure, particularly that of higher education, was mainly covered by the government. But ETP proposed cost-sharing scheme for education beyond upper-secondary level (starting from grade II through tertiary level). The scheme proposed to facilitate for students to cover their educational costs through service or payment after graduation (FDRE 1994).

The education sector development in general and the higher education sub-sector in particular is guided by the Education Sector Development Program (ESDP), which spans for 20 years. The program is being rolled-out in phases. The first phase, ESDP-I covered the period 1997 to 2001. ESDP-I had only a little to say about higher education (Amdissa, 2009). Even though ESDP-I hasn't said much about the sectors, higher education witnessed rapid expansion during the period. Four new public universities – Mekelle, Jimma, Bahir Dar, and Debu – were established through amalgamating and elevating the status of the existing colleges and institutions. Five new, private and nongovernmental higher education institutions were also accredited up to 2001 (MoE, 2002b).

ESDP-II run from 2002 to 2005 and aimed to produce good citizens who understand, respect and defend the constitution, realize universal access to

primary education, meet the qualitative and quantitative demand for trained manpower and build capacity within the education system for sustainable development. Distance education was also given attention as a tool for promoting formal and non-formal education (Amdissa 2009). Massive expansion plans were made, both in enrollment and programs, for the sector during ESDP-II. The plan also suggested radical and comprehensive changes in management and administration reform in order for higher education institutions to achieve better quality and greater efficiency. During the same period, Higher Education Proclamation was ratified in 2003 (MoE, 2002b: FDRE 2003).

The higher education proclamation presents a number of provisions for the higher education sector that include autonomy, academic freedom, rights and responsibilities of stakeholders of the sector, as well as establishment of executives. However, whereas this law granted administrative autonomy to higher education institutes, their autonomy is subjected to “other laws” and approval by “appropriate body”, in most cases by the Ministry of Education (MoE) and Council of Ministers. Accordingly public higher education institutes have a role that is limited only to nominating top officials of the institute such as the board, head and vice head of the institute (FDRE, 2003).

The 2003 Higher Education Proclamation also gave provisions for the establishment of Education Relevance and Quality Follow-up Agency and Higher Education Strategy Center. The Education Relevance and Quality Follow-up Agency is responsible for supervising quality and relevance of higher education. The agency was given the power to ensure standard, relevance and quality in any higher education institution in Ethiopia. It is also responsible for ensuring for programs in any institute to be inline with the country’s economic, social and other appropriate policies. On the other hand, the Higher Education Strategy Center was established as the ‘brain center’ for

the sector. It is responsible for formulating the mission and strategy of higher education in the country in order to make higher education compatible with manpower needs and policies with due consideration to global situation (FDRE 2003).

During ESDP-I and ESDP-II higher education in Ethiopia went through a rapid expansion. In addition to the then existing two (Addis Ababa and Alemaya) universities, six additional universities (Mekelle, Jimma, Bahir Dar, Debub, Gonder and Arbaminch) were established. As a result of this expansion and upgrading, the intake capacity of the government higher education institutions has increased from 9,067 in 1996/97 to 31,997 in 2004/05. However, with a tertiary level gross-enrollment rate (GER) of 1.5 % in 2004/05, Ethiopia still lags behind the 3% average for Sub-Saharan Africa. The curricula for all the programs have also been revised in an attempt to ensure the relevance of the training programs (MoE 2005b).

ESDP-III set several goals based on the government's top priorities aligned with the five year development plan, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). ESDP-III set the following goals for the period 2005/2006 – 2010/2011 regarding higher education, develop responsible and competent citizens to meet qualitative and quantitative demand for highly trained labor, ensure democratic management and governance in higher education system, set up cost effective, efficient and result oriented system and develop the volume, quality and relevance of research and consultancy services which are necessarily directed to the needs of the country (MoE 2005b).

During ESDP-III, it was planned to expand the capacity of the existing eight universities to accommodating 8 – 10 thousands additional students. It was also planned to establish/upgrade thirteen higher education institutions into

universities. These institutions were planned to be established in Dessie/Kombolcha, Debrebirhan, Debreworkos, Nekemte, Bale-Robe, Nazareth, Sodo, Dilla, Mizan/Tepi, Jijiga, Semera, Dire Dawa and Axum. It was also planned to increase the intake capacity of public higher education institutes under MoE to 110 thousand per annum. Incentive for private institutions was also proposed such as land provision, tax exemption, provision of technical support and short-term training programs. Increasing the capacity in terms of intake capacity and diversity of postgraduate programs was also given appropriate attention in order to meet teachers need at higher education institutes in the country. Employment of expatriate academic staffs was taken as a means to fill the gap in the short term (MoE 2005b).

During ESDP-III, the first higher education proclamation (Proclamation No. 351/2003), which was ratified in 2003, was revised and replaced in 2009 by higher education proclamation No. 650/2009. Accordingly the scope of higher education covers all levels including and beyond undergraduate degree by re-grouping diploma level trainings into technical and vocational trainings. The revision also gave discretion for MoE to grant higher education institutes the status of university without a need to go through the stages of college/university college for several years. This is possible if it is conceived, in the judgment of the Ministry, that the institutes have the resources as well as institutional plans and vision in such a way that it can fulfill the requirements in a specific time period (FDRE 2009). It seems that the operating field is not a level one between private and public institutions. Public institutes opened by the Ministry automatically get the status of a university (since it is the Ministry that requests and approves the status). On the other hand, new private institutes get the status of a university based on the 'judgment' of the Ministry.

According to Ajayi (1996), as cited by Demissu (2008), institutional autonomy includes corporate freedom of universities from external interference (the freedom to design curricula, hire and fire staff, as well as admit and dismiss students without interference), participation of academic community in the free selection of leaders and governing body members, and protection of the institute from threats to its autonomy coming from any sources (including prohibition of armed security forces from entering the institution's premises).

The autonomy of public institutes in Ethiopia remained under the condition that it is subjected to the power and responsibility of its board and the ministry even after the revision of the proclamation in 2009. Accordingly, the responsibility to appoint the head and vice-head of public higher education institutes is vested on the government, not on the institutes themselves. While the revised proclamation provides a number of rights and obligations of students and staff members, it fails to address students' right to get accreditation for the studies they have completed.

Currently, the Ethiopian Government is implementing ESDP-IV. The implementation period of ESDP-IV is from 2010/2011 – 2014/2015. ESDP-IV is closely aligned with the Growth and Transformation Plan (GTP) of Ethiopia. To achieve the status of becoming a middle income country by 2025, ESDP-IV suddenly shifted the attention of the education system onto science and technology. Particularly, it proposed to effectively promote the policy of 70:30 higher education intake ratios in favor of science and technology (MoE 2010b).

At the beginning of ESDP-IV the number of public universities in the country reached twenty-two. More than 50 private higher education institutions were also accredited within ESDP-III period (MoE 2010b).

In relation to the higher education, ESDP-IV stipulates to achieve the following objectives:

- Balanced distribution of higher education opportunities, in particular to science and technology
- Improved teaching and learning processes, increased interpersonal growth and improved employability through high quality higher education and relevant professional mix with equitable participation of both sexes
- Improved access to and success in higher education of disadvantaged groups
- Enhanced capacity of institutions of higher education for knowledge creation and transfer as well as community and consultancy services to the economy and society at large
- Strengthened good governance, management and leadership capacity at the systems and institutional levels.

Moreover, ESDP-IV plans to increase transition rate to tertiary education from 81 to 95 percent, increase enrollment into government undergraduate programs from 185,788 to 467,445, boost the share of female enrolment from 29 to 40 percent, shift intake ratio of Science and technology to Social Sciences and Humanities from 58:42 in 2008/09 to 70:30 by 2014/15, increase post-graduate enrolment from 4,878 to 16,100 including 3,000 at PhD level. At the same time, it stipulates to increase the share of females in post-graduate programs to 25 percent from 10, improve the graduation rate to 93 percent from its current 79 percent. Furthermore, ESDP-IV sets targets for staff to student ratio of 1:25 for science and technology, 1:15 for medicine and health sciences, 1:20 for agriculture and life sciences, and 1:30 for social and human sciences by 2014/15 (MoE 2010b).

Other key targets include increasing the number of teachers to 23,000, of whom 75 percent hold masters and 25 percent PhD. Furthermore, female teachers are expected to account for 20 percent of the total size of teachers in higher education institutes and those at top leadership position will increase from 3 to 16. The plan also aspires to have a full coverage of higher education institution in quality audits from its current 20 percent coverage. It is also planned to increase the number of technology institutes to 10 by the end of the planning period (MoE 2010b).

5.3 Sectorial Developments

5.3.1 Development of Public Institutes of Higher Education

By 1991, when the Dergue regime was over-thrown, Ethiopia had only two universities. But by the beginning the new millennium this number has grown to six. Four universities, namely Debub, Jimma, Bahir Dar and Mekelle universities were established and started their operation with their university status in the 2000/01 academic year. In subsequent years, Gonder College of Medical Science (in 2003) and Arba Minch Water Technology Institute (in 2004) were upgraded to a university level. Table 5.1 presents the spatial distribution of higher education institutions in Ethiopia in 2001.

Table 5.1: Regional distribution of public higher education institutes by 2001.

No.	Name of Institution	Year Established (G.C.)	Location	Distance from Addis (Km)
1	Addis Ababa University	1957/58	Addis Ababa	-
2	Alemaya University	1950/51	Oromia	510
3	Debub University	1999/2000*	SNNPR	275
4	Jimma University	1999/2000*	Oromia	335
5	Bahir Dar University	1999/2000*	Amhara	580
6	Mekelle University	1999/2000*	Tigray	783
7	University of Gondar	1954/55	Amhara	750
8	Arba Minch University	1986/87	SNNPR	500

Source: Education Statistics Annual Abstract – MoE (2001)

* These are the years that these institutes were officially inaugurated as Universities

In 2010/11 the total number of operational public universities in Ethiopia reached twenty-two. As stated earlier, the recent rise in the number of universities in the country resulted from a number of factors, including new establishments of higher education institutions, and restructuring and amalgamations of already existing ones. Taking Debub University as one instance, it split into Hawassa and Dilla Universities.

As seen in Table 5.2, in 2011 each regional state except Gambella, Harari, and Benishangul-Gumuz has at least one public university. Over a quarter of the public universities in the country in 2011 were located in Oromia. Amhara and SNNPR, each had around 23% of the public universities in the country in 2011.

Table 5.2: Regional Distribution of Public Universities

Region	Number of public universities
Oromia	6
Amhara	5
SNNP	5
Tigray	2
Addis Ababa	1
Afar	1
Somali	1
Dire Dawa	1

Source: Data from Education Statistics Annual Abstract – MoE (2011); and authors' computations

Over the period 2000/01-2010/11, diploma programs in public universities phased-out starting from 2005. In turn public universities upgraded most of their programs to degree level for all their regular, evening and summer programs. In addition, the public universities have given considerable attention to opening and expanding post-graduate programs. For instance, Addis Ababa University (AAU) currently has over 220 post-graduate degree (69 PhD-level and 151 Masters-level) programs. Likewise, Haramaya³² University has 63 post-graduate (13 PhD-level and 50 masters-level) programs.

5.3.2 Development of Private Institutes of Higher Education

The Higher Education Proclamation defines "private institution" as any non-public higher education institution established by one or more individual owners or by nonprofit making associations, founded as cooperative society or commercial association, or higher education institution established abroad and operating in Ethiopia (FDRE 2009). Ethiopia has a very infant private

³² Formerly Alemaya University

higher education sector which started with merely zero enrollments in 1998. The sector is characterized as small and dominated mainly by family-owned operators mainly concentrated in the capital city, Addis Ababa (Nwuke 2008). According to the annual statistical abstracts of the Ministry of Education (MoE), only six private institutes of higher education reported enrollment in the academic year 2000/2001. These institutes are Ethiopian Adventist College, "Menshen Für Menschen" Foundation Agro-Technical Training College, Unity College, Africa Beza College, Alpha Education and Training Share Company Higher Institute of Distance Studies, and Microlink Information Technology College.

Between 2000/01 and 2010/11, the number of private higher education institutions has increased rapidly. To be more specific, the number of accredited private higher education institutes increased from six to nearly 60 during the same period. Unlike the public higher education institutes, most of the private higher education institutes operate in multiple locations having their centre in Addis Ababa. More specifically, 38 out of 59 private higher education institutes have their main campuses located in Addis Ababa. SNNP has the second largest number of private higher education institutes (8 institutes) followed by Tigray (5 institutes), Amhara (4 institutes), Oromia (2 institutes) and 1 each in Harari and Dire Dawa.

The geographic distortion of private institutions goes against the government's policy to reduce the special disparity among regions. Nwuke (2008) tried to explain this by mentioning three factors. The first is the fact that industrial and modern activities remain concentrated around Addis Ababa. The second is that private higher education institutes depend on revenues generated from tuition fees by those who are willing and able to pay it. Since Addis Ababa is the wealthiest region, it is logical to target this market. Finally, infrastructure related

gaps raises the cost of doing business, hence making it more expensive for private providers to operate outside of the capital.

Looking at the dynamics in terms programs offered by private institutions, we can observe that these institutes started mainly by offering diploma programs. Eventually they have started opening under-graduate degrees and more recently post-graduate programs. The enrollment data from the statistical abstracts of the Ministry of Education (MoE) show that the private sectors started enrolling students for undergraduate degree programs in 2002/03 and for masters in 2008/09 academic years. In addition to their degree programs, many private institutes also offer technical and vocational trainings that lead to different certifications.

5.4 Performance of the Higher Education Sub-sector

5.4.1 Budget

Table 5.3 shows the trend of government budget allocated for education sector in general and for higher education in particular. The overall education system in Ethiopia gets a significant amount of the federal government's budget. During 2000/01 to 2010/11, about 29% of the federal government's budget went to the education sector. Furthermore, on average, the recurrent budget of the education sector took about 45% of the federal government's recurrent budget and 23.6% of the federal government's capital budget went to the capital budget of the education sector for the same period.

The budget allocated for higher education has shown a sharp rise during the period under consideration. In 2000/01 the budget allocated to higher education was half a billion birr. After ten years, i.e., in 2010/11, it grew to over six billion. This is an encouraging indicator that the sub-sector is getting a fair share of the federal government's resources.

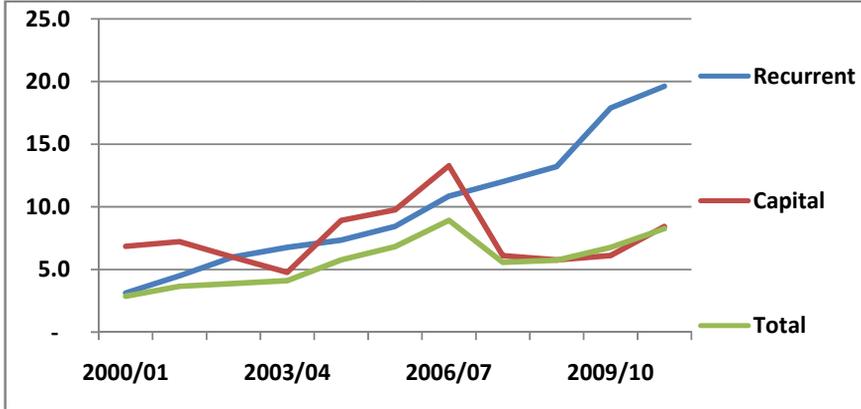
Table 5.3: Education Budget Composition

Academic Year	Higher Education (In millions of Birr)			Education Total (In millions of Birr)
	Recurrent	Capital	Total	
2000/01	267	182	449	4,172
2001/02	325	224	548	4,311
2002/03	438	231	669	5,288
2003/04	533	257	790	6,173
2004/05	597	674	1,271	6,874
2005/06	732	1,318	2,051	8,383
2006/07	1,030	2,134	3,163	10,410
2007/08	1,296	1,151	2,447	12,011
2008/09	1,769	1,348	3,117	14,762
2009/10	2,586	1,778	4,365	17,249
2010/11	3,351	3,033	6,384	23,345

Source: Data from several issues of Federal Budget Proclamations and Ministry of Finance and Economic Development; and authors' computations

As seen in Table 5.3 the budget share of higher education increased from around 11% in 2000/01 to 25% in 2010/10. Similarly, the share of the sub-sector in the overall federal government budget has also increased from 2.9% in 2000/01 to 8.3% in 2010/11, although there were several ups and downs in the trend during the period (see Figure 5.1). The figure shows the share of recurrent, capital and total expenditures of higher education out of their counterparts in the federal budget.

Figure 5.1: Share of Higher Education Budget in the Federal Government's Budget



Source: Data from several issues of Education Statistics Annual Abstract; and authors' computations

The budget trend shows that the higher education sub-sector is rapidly getting the attention of the government. It is good news that the budget is on the rise. But the sub-sector is still getting a very low share of the budget as compared to the amount of expansion that it is going through. The upward bent of the trend in 2006/07 is due to the expansion of the capital expenditure when the newly emerging universities were constructed and finalized. This shows that much of the investment in higher education is dedicated to building the infrastructure rather than running the facilities (the actual building human capital process). Notwithstanding the physical expansion and accepting that these are important, equivalent attention needs to be given for the actual process of teaching as well as research activities of these institutions.

5.4.2 Teaching Staff

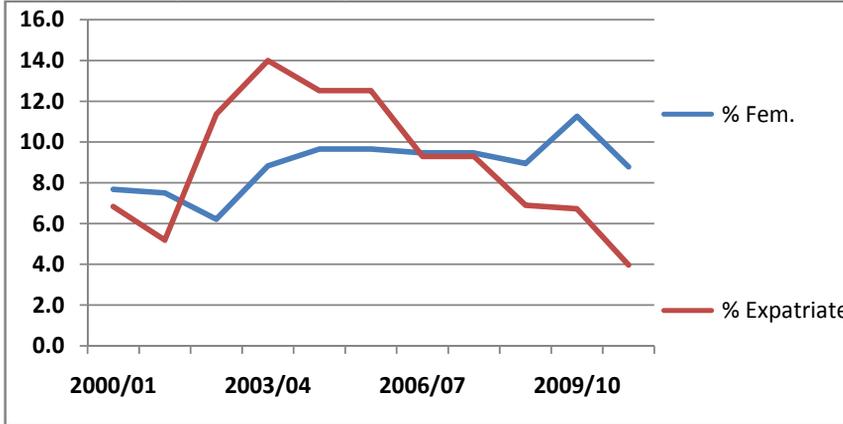
While expansion in physical facilities is certainly necessary, higher education institutes need qualified teachers to achieve their objectives. However, attracting and retaining qualified academic staff in higher education institutions is a major challenge. Institutions both in the private and public sectors tried to fill this gap by employing expatriate staff apart from locally available instructors. As shown in Table 5.4, the proportion of expatriate staff in public higher education institutes grew from nearly 7% in 2000/01 to 14% in 2003/04 and declined afterwards. The proportion of female teachers remained low and generally unchanged during 2000/01 to 2010/11 period. This suggests that a lot more effort is needed to be invested to achieve the 20% target set by ESDP-IV.

Table 5.4: Compositions of Teachers in Public Institutions

Academic Year	ETHIOPIAN		EXPATRIATE		TOTAL		% Female	% Expatriate
	Both Sex	F	Both Sex	F	Both Sex	F		
2000/01	2,755	194	202	33	2,957	227	7.7	6.8
2001/02	2,742	199	150	18	2,892	217	7.5	5.2
2002/03	3,097	176	397	41	3,494	217	6.2	11.4
2003/04	3,447	275	561	79	4,008	354	8.8	14.0
2004/05	3723	340	533	71	4256	411	9.7	12.5
2005/06*	3723	340	533	71	4256	411	9.7	12.5
2006/07	5250	468	538	80	5788	548	9.5	9.3
2007/08*	5250	468	538	80	5788	548	9.5	9.3
2008/09	8,841	744	655	106	9496	850	9.0	6.9
2009/10	13,176	1,465	950	126	14126	1591	11.3	6.7
2010/11	15,255	1,286	631	110	15886	1396	8.8	4.0

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

* Data was not available for these years so the figures for the previous year are used

Figure 5.2: Trend of Share of Female and Expatriate Teachers (Government)

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations.

Table 5.5 shows the size and composition of teachers in private higher education institutes. As seen in the Table, the number of teachers in private higher education institutes had increased from just 275 to 1,516 during the eleven years period of our analysis. Unlike public higher education institutes, the proportion of expatriate staff had remained below 5% during the same period. Female teachers, on the other hand, have better representation in private higher education institutes compared to the public higher education institutes. During the period under study, the proportion of female teachers in private higher education institutions had nearly doubled.

Table 5.5: Compositions of Teachers in Private Institutions

Academic Year	ETHIOPIAN		EXPATRIATE		TOTAL		% Fem.	% Expatriate
	Both Sex	F	Both Sex	F	Both Sex	F		
2000/01	267	16	8	3	275	19	6.9	2.9
2001/02	408	29	13	4	421	33	7.8	3.1
2002/03	698	62	32	7	730	69	9.5	4.4
2003/04	771	94	24	7	795	101	12.7	3.0
2004/05	569	87	22	2	591	89	15.1	3.7
2005/06	569	87	22	2	591	89	15.1	3.7
2006/07	-	-	-	-	651	88	13.5	-
2007/08*	-	-	-	-	651	88	13.5	-
2008/09	1,504	232	28	4	1,532	236	15.4	1.8
2009/10	1,553	187	28	12	1,581	199	12.6	1.8
2010/11	1,493	195	23	13	1,516	208	13.7	1.5

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

* Data not available for this year and the data from the previous academic year is used.

As the foregoing analyses portray the number of teachers in higher education institutes had rapidly increased over the 2000/01 to 2010/11 period. However, while the rise the number of teachers is useful, it is necessary to examine to what extent the rise in the number of teachers matches the rise in the number of students enrolled in these institutes. In this regard, Table 5.6 presents an overview of the trend in Pupil Teacher Ratio (PTR) in higher education institutes in Ethiopia. One short-coming of this analysis is that the data are only for full-time teachers working in higher education institutes. As may be expected this underestimates the PTR figures reported in the table since considerable amount of teaching services is provided by part-time instructors in most higher education institutions. Having this limitation in mind, the figures reported in the table show that the number of pupil per

teacher had nearly doubled during the 2000/01 to 2010/2011 period. *Ceteris paribus*, this implies that the opportunity for contact between the teacher and pupils had become limited over time due to greater rise in the number of pupil enrolled in higher education institutes.

Table 5.6: Pupil Teacher Ratio (PTR) for Undergraduate programs - Public and Private

Academic Year	Undergraduate Enrollment *	Full Time Teachers	PTR
	(a)	(b)	(a)/(b)
2002-03	58,026	4,224	13.7
2003-04	98,404	4,803	20.5
2004-05	138,159	4,847	28.5
2005-06	173,901	4,848	35.9
2006-07	203,399	8,355	24.3
2006-07	203,399	8,355	24.3
2007-08	263,001	-	-
2008-09	310,702	11,028	28.2
2009-10	420,387	15,707	26.8
2010-11	447,693	17,402	25.7

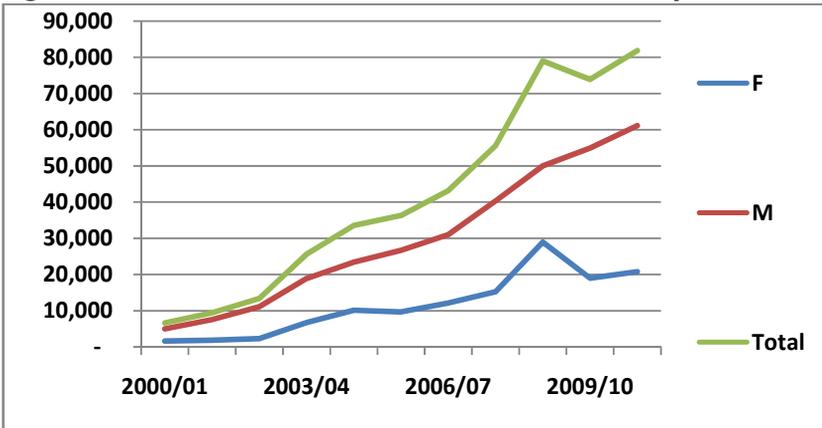
Source: Data from several issues of Ethiopian Education Statistical Abstracts

* Enrollment in this context means all those undergraduate students who have registered for the first semester of the year (not necessarily new ones)

5.4.3 Under-graduate Enrollment Trend

As may be expected, the physical expansion of higher education institutes is strongly linked with massive enrollment of student into higher education system. This can be seen, for instance, from the more than 13-fold increase in enrollment of students in regular undergraduate programs. More particularly, the total number of students enrolled in regular undergraduate programs was 6,644 in 2000/01. This number reached 87,989 for the same program in 2010/11. Private institutions started enrolling students for undergraduate degree programs starting from 2002/03 academic year. Despite rapid growth of student enrollment in higher education over the last decade, the gender imbalance is still persisting particularly within public institutions (see Figure 5.3).

Figure 5.3: Trend of Enrollment in Public Institutes by Sex



Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

Enrollments in diploma level programs were reported under the higher education system until 2004/05. Afterward these programs were categorized under the technical and vocational education and training (TVET) programs following the 2003 higher education proclamation. Table 5.7 summarizes the student enrollments in the regular diploma programs for both public and private institutions.

Table 5.7: Enrollment in regular diploma programs

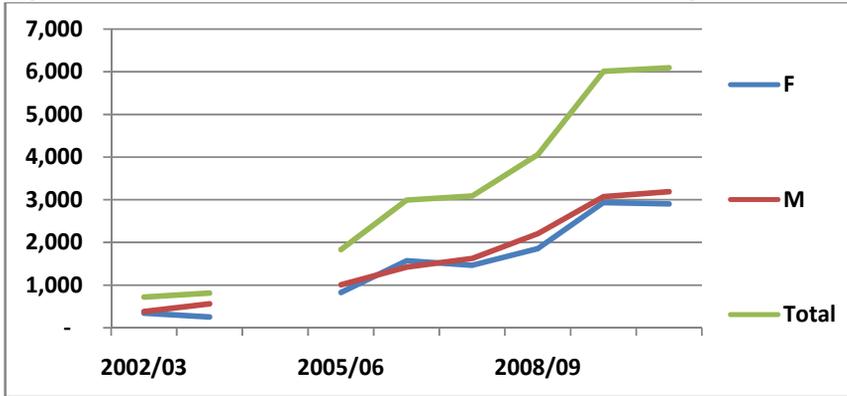
Academic Year	Public			Private		
	F	M	Total	F	M	Total
2000/01	1,520	4,644	6,164	3,698	7,477	11,175
2001/02	1,792	4,798	6,590	7,202	5,417	12,619
2002/03	2,283	7,769	10,052	3,750	3,971	7,721
2003/04	242	1,263	1,505	70	243	313
2004/05*	209	583	792	-	-	-

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

* Date is not available for the private institutions

The case of private institutions seems to be different from that of public when it comes to gender equity. During our reference period the percentage of female students among the total did not fall below 31% and averaged at 46%. During 2006/07 their share in enrollment has reached 52%, which is probably for the first time in Ethiopia that under-graduate female enrollment exceeded that of male.

Figure 5.4: Trend of Enrollment in Private Institutes by Sex



Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

5.4.4 Post-graduate Enrollment Trend

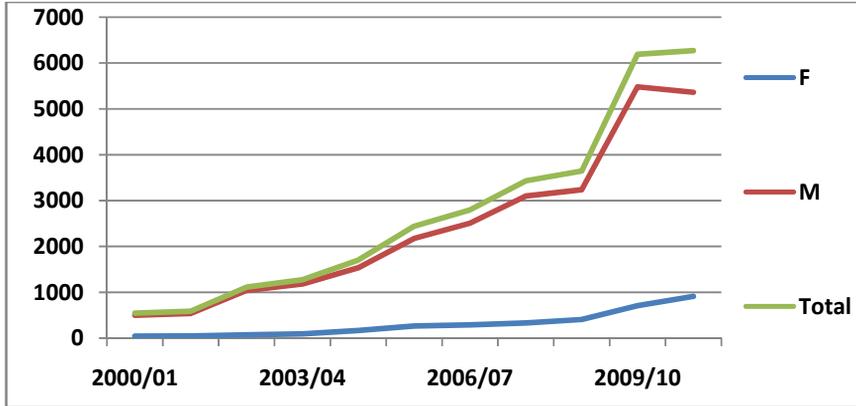
From its first launch in 1978 by Addis Ababa University (Amdissa 2009), post-graduate training in Ethiopia has achieved several milestones. These achievements include the launching of several new masters and PhD level trainings by the different public institutions as well as, more recently, private institutions.

Post-graduate program has received increased attention recently due to the aggressive expansion plan of the government to expand higher education. Post graduate trainings are given the special duty of training teachers for the emerging universities.

A close look into the trend of student enrollment in post-graduate training shows that enrollment in masters and PhD level programs by public institutions has reached more than six thousand by the year 2010. More

specifically, post-graduate level student enrollment in public universities grew from 543 in 2000/01 to 6,271 in 2010/11 (see Fig. 5.5).

Figure 5.5: Trend of Post-Graduate Enrollment in Public Institutions



Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

In terms of gender composition, the gender gap in public post-graduate programs is even worse than that of undergraduate level training. What is even more striking is that the gender gap has increased over the past ten years (see Figure 5.5).

Graduate training at private institutions is a recent phenomenon. According to the enrollment data, it has started in the 2008/09 academic year. Although regular private post-graduate program is at its infancy, such interventions by the private sector could play important role in helping the government save some of its resources to be reallocated into areas where it is most needed. In addition to sharing the government's burden of giving training at graduate level, there is a relatively smaller gender imbalance in the graduate enrollments of private institutions. Women in private institution's graduate

programs account for 33% of the enrollment on average (ranging between 16 and 64 percents) while that of public universities average at 9.8% with a range of 6 to 15.

Table 5.8: Post-graduate enrolment in private institutes

Year	M	F	Total	% Female
2008/09	53	10	63	15.9
2009/10	112	26	138	18.8
2010/11	58	104	162	64.2

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

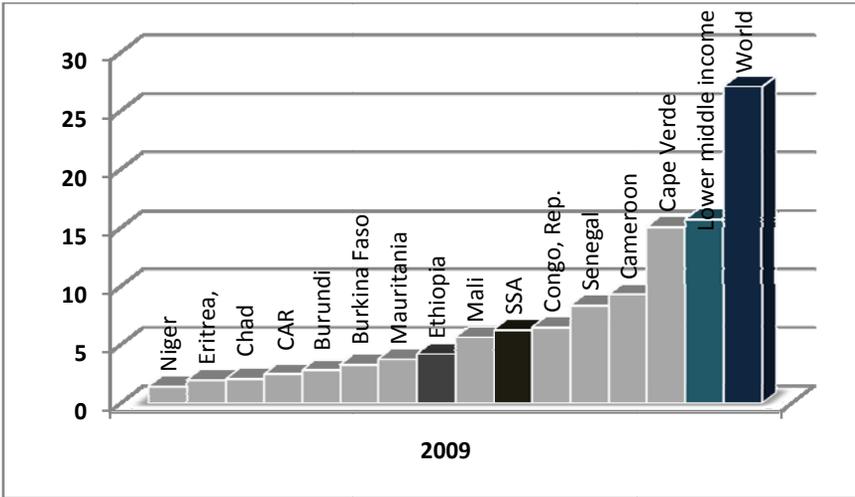
Private institutes perform better than public institutes in terms of reducing gender gap in enrollment, both for undergraduate and graduate. This calls for further analysis into the issue to draw lessons and formulating policy to close the gender gap among students of higher education.

5.4.5 Brief Comparison of Ethiopia's Higher Education Student Enrollment with Some Selected Countries

Gross enrollment ratio (GER) is the most widely used indicator of cross-national comparison of higher education student enrollment. GER is defined as the ratio of total enrollment, regardless of age, to the total population in the five year age group that is expected to be in tertiary level. Figure 5.6 portrays the GER of some selected Sub-Saharan African (SSA) countries. The GER shows wide variation in SSA. The lowest and highest performers in relation to tertiary education GER in SSA in 2009 were Niger (1.42%) and Cape Verde (15.05%). Ethiopia's tertiary education GER (4.19%) seems to be close to the average for Sub-Saharan Africa as a whole. It is important however that tertiary GER for SSA is far behind the average tertiary GER for

lower middle income countries (15.7%). As may be expected, tertiary education GER of SSA and developing countries lags behind tertiary education GER of most advanced countries. For instance, in 2009 the tertiary education GER for the United States was 89%, Sweden 71%, UK 59% and Euro area 60%.

Figure 5.6: Gross Enrollment Ratios of some selected Sub-Saharan African countries



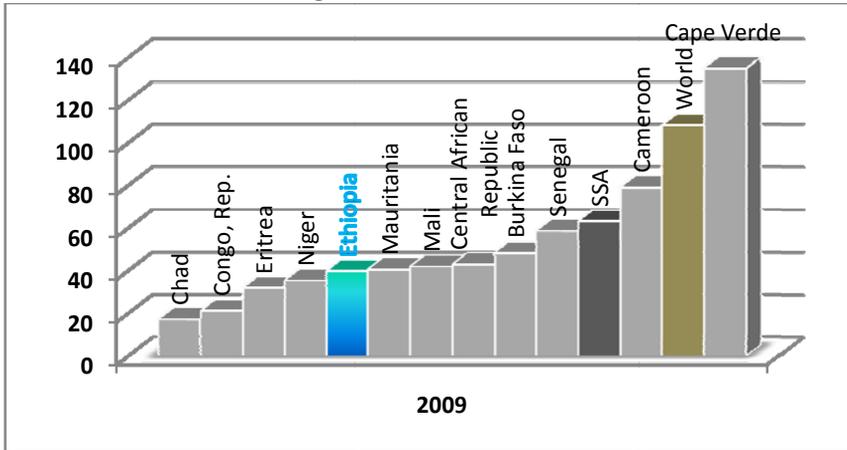
Source: World Development Indicators

(<http://data.worldbank.org/indicator/SE.TER.ENRR>); and authors' compilation

In terms of gender equity, Ethiopia's tertiary education GER seems to perform less well compared to other countries in SSA. In other words, tertiary education in Ethiopia is less accessible to girls. In 2009, there were only 39 female students enrolled in tertiary education for every 100 male students enrolled in tertiary education in Ethiopia. In contrast, SSA had on average 63.3 female students enrolled in tertiary education for every 100 male students enrolled at the same level. The world average the same period there was

108.2 females students enrolled in tertiary education for every 100 male students enrolled at the same level for the world as a whole.

Figure 5.7: Ratio of Female to male tertiary enrollment for selected Sub-Saharan African countries, Sub-Saharan average and World average



Source: World Development Indicators

(<http://data.worldbank.org/indicator/SE.ENR.TERT.FM.ZS>); and authors' compilation

5.4.6 Graduates

The main output of the higher education system is its graduating students and its research outputs. Due to limitation of data, we only focus on graduates to analyze the output trends of the Ethiopian higher education sub-sector. Since diploma level trainings have been transferred to technical and vocational education and training (TVET) programs since 2004/05, our report covers the period from 2000 to 2005 for this program. The table below presents the details of the number of graduates from the diploma programs of both public and private institutions disaggregated by gender.

Table 5.9: Graduates of diploma programs

Diploma Government						
Academic Year	Regular			Continuing Education³³		
	F	M	Total	F	M	Total
2000/01	793	3,681	4,474	1,145	3,839	4,984
2001/02	962	3,831	4,793	1,025	3,729	4,754
2002/03	1,268	4,380	5,648	1,616	5,764	7,380
2003/04	1,714	5,948	7,662	2,317	7,145	9,462
2004/05	244	1,446	1,690	1,823	5,525	7,348

Diploma Private						
Academic Year	Regular			Continuing Education		
	F	M	Total	F	M	Total
2000/01	924	1,661	2,585	299	476	775
2001/02	1,413	1,918	3,331	474	475	949
2002/03	2,691	4,279	6,970	964	1,080	2,044
2003/04	3,998	3,643	7,641	2,107	1,974	4,081
2004/05	1,124	574	1,698	935	759	1,694

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

In line with the increased enrollment, the number of degree graduates of public institutions has also increase in a tremendous amount. Particularly in the academic year 2005/06 the number almost tripled from that of 2004/05 for regular undergraduate degree graduates. The academic year 2005/06 is the year where most of the first batches of the new curriculum have graduated. Overall, the number of graduates from regular undergraduate degree programs has increased from close to four thousand to more than forty-one thousand, which is more than tenfold.

³³ Continuing education program includes evening, distance and summer programs.

Table 5.10: Graduates from undergraduate degree programs from public institutions

Academic Year	Regular			Continuing Education		
	Total	F	% Female	Total	F	% Female
2000/01	3,882	493	12.7	879	170	19.3
2001/02	3,349	350	10.5	898	154	17.1
2002/03	4,798	472	9.8	1,344	180	13.4
2003/04	4,965	629	12.7	2,253	314	13.9
2004/05	7,380	961	13.0	3,388	638	18.8
2005/06	21,371	3,087	14.4	3,227	769	23.8
2006/07	23,367	4,077	17.4	6,034	1,121	18.6
2007/08	26,839	4,736	17.6	12,465	2,665	21.4
2008/09	31,926	6,131	19.2	11,881	3,727	31.4
2009/10	38,174	8,042	21.1	15,700	3,577	22.8
2010/11	41,514	12,315	29.7	23,134	4,380	18.9

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

Not surprisingly, the number of graduates is also dominated by male graduates. On the average, female graduates account for 16.2% in regular and 20% in continuing programs. The number of female graduates go as low as 9.8% and as high as 29.7% for the regular program while that of continuing program range between 17.1% to 31.4%.

As mentioned earlier, private higher education provision is a recent phenomenon. Degree programs have started in these institutes even later than their commencement of operation. According to the statistical abstracts of the MoE, the first degree graduates from private institutions were reported to graduate in 2002/03. There were only 152 graduates out of which one third were female. In 2010/11 the number of graduates with undergraduate

degrees from the regular programs of private institutions has reached 3,528. This number might seem very small as compared to the more than forty-one thousand of the public institutes but this is as many as what public institutions has graduated by the year 2000 despite their history of more than half a century. The gender distributions among the graduates from private institutions also seem to be better than that of the public. Even though there is still a gap in the number of male and female graduates, the gap is much narrower in private institutions.

Table 5.11: Graduates from undergraduate degree programs from private institutions

Academic Year	Regular			Continuing Education		
	Total	F	% Female	Total	F	% Female
2002/03	152	53	34.9			
2003/04	382	211	55.2			
2004/05	598	232	38.8	169	58	34.3
2005/06	512	177	34.6	322	91	28.3
2006/07	225	73	32.4	219	100	45.7
2007/08	950	305	32.1	7,725	2,225	28.8
2008/09	2,573	1,127	43.8	9,729	5,774	59.3
2009/10	3,050	1,406	46.1	10,075	2,674	26.5
2010/11	3,528	1,596	45.2	7,172	2,274	31.7

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

Similar to the trends in enrollment as well as graduation at undergraduate programs, the number of graduates from post-graduate programs has increased particularly starting from 2005/06. The expansion projects in the higher education sub-sector have contributed greatly to this growth. The inception and establishments of new universities created a huge demand for

teachers trained at post-graduate levels. In response to this the government has given its attention for the strengthening and expansion of such programs in different universities.

Table 5.12: Graduates from post graduate degree programs from public institutions

Academic Year	Masters			PhD		
	F	M	Total	F	M	Total
2000/01*	30	360	390			
2001/02*	33	411	444			
2002/03	41	429	470	1	3	4
2003/04	51	684	735	1	0	1
2004/05	101	1,025	1126			
2005/06	136	1,245	1381		7	7
2006/07	259	2,402	2,661		10	10
2007/08	283	2,362	2,645	1	18	19
2008/09	399	3,017	3,416		15	15
2009/10	625	3,875	4,500	18	131	149
2010/11	819	5,057	5,876	1	20	21

Source: Data from several issues of Ethiopian Education Statistical Abstracts; and authors' computations

* Data includes both Masters and PhD graduates

During the twenty-two years period from its launch in 1978 to 2000, post graduate training has reached only to graduating less than four hundred students. But in just one decade starting from 2000/01 this level has grown to exceed five-thousand. Much of this expansion is achieved in the masters programs. The PhD studies are still lagging behind.

5.5 Conclusion

The Ethiopian higher education sub-sector has a relatively longer history as compared to its neighbors in Sub-Saharan Africa (SSA). During its six decade history, the higher education system has gone through a number of changes. In recent years, higher education in Ethiopia has received increased attention from the government. For instance, government budget allocation for the sub-sector has increased more than ten-folds between 2000/01 to 2010/11. As a result of this and other favorable policy changes in the country, the higher-education sub-sector has increased both in terms of its physical size and geographical coverage in the country. Prior to 2000, higher education institutes were few in number, located only in limited parts of the country and had a very small number of student enrollment. Most of these changed in the past eleven years since then. At the present, there is at least one public university in all the regional states in the country, except for Harari, Benishangul-Gumuz and Gambella. Moreover, during the last decade, the number of public universities has increased from 6 to 22 and currently ten more are under construction. As a result of public higher education expansion over the past ten years, public higher education enrollment has registered a rapid increment.

Private higher education institutes in Ethiopia have also grown both in their number and student enrollment over the past ten years. However, unlike the public higher education institutions, the geographic distribution of private higher education institutes is highly uneven. Most of the private higher education institutes are located in the country's capital city, Addis Ababa. In contrast, private higher education student enrollment reveals lesser gender gap compared to public higher education institutes.

To conclude, Ethiopia had registered an encouraging record in higher education coverage in recent years. This needs to be continued to the future

too. At the same time, it is useful that higher education institutes also put continued efforts to reduce the growing gender gap in tertiary enrollment, improve training quality to students, increase the quantity and quality of academic staff, engage in research more aggressively and meet labor market demand for graduates.

Part II
Transport Sector Development in
Ethiopia: Performance, Policies and
Its role in the Economy

Introduction to Part II

Systems of production and consumption have become increasingly interdependent all around the globe. Industries in any given country depend on other countries for the goods and services they need. This would not be possible if not for the advancement in transportation and communication systems.

In Ethiopia, all the four modes of transport have been serving their different parts but to a different degree. The transport sector of the country is dominated by road transport in both passenger and freight traffics. However, transport services are generally not accessible to the large majority of the rural population, hence the heavy dependence on walking, head loading, and pack animals.

The importance of transport to an economy is far higher than its direct contribution to GDP, export earnings, tax revenue and employment because transport services are critical inputs for all the other sectors. Despite its indispensability for the growth and development of the country, only little has been done on the subject. So as to bridge the research gap, this report presents an assessment of the current state of the sector and put forward recommendations that will help address the bottlenecks hindering the development of the sector.

The rest of part II is organized as follows. Chapter six presents the evolution of the transport system both from global and national perspectives. Chapter seven presents a review of the current state of the transport sector. Chapter eight reviews transport sector policies, strategies and programs. Chapter nine provides the theoretical underpinning and linkage analysis between transport and the economy. Chapter ten brings to light the safety, energy-use and environmental concerns in the sector and the last chapter winds up with a summary and some recommendations.

Chapter Six

Evolution of the Transport System

6.1 The Global Perspective³⁴

A large body of literature has dealt with the evolution of transport system, but not as comprehensively and in detail as Jean-Paul Rodrigue (2009). Rodrigue summarized the development of the sector from the pre-industrial era to the early 21st century in five major stages, each linked with specific technological innovations; the pre-industrial era, the industrial revolution, emergence of modern transportation system, Fordism and post-1970 (globalization). The discussions on each stage are presented in the following sections.

6.1.1 Pre-Industrial Era

There were no forms of motorized transportation system. The transport technology was limited to harnessing animal labor for land transport bound for maritime transport. The transported quantity was very limited, and the speed of transportation very slow because the efficiency of the land transport was very poor. Besides, the majority of trade was local in scope. The system was a set of a relatively self-sufficient economic system with very limited trade. The provision of cities in perishable agricultural commodities was limited to a small radius. International trade did exist, but the commodities traded were of a high value (luxury goods), such as spices, silk, wine, and perfume.

³⁴ This section has fully drawn on the work of Jean-Paul Rodrigue, Claude Comotios and Brian Slack (2009), *The Geography of Transport System*, second edition, New York.

6.1.2 Industrial Revolution (1800-1870)

It was during the industrial revolution that massive modifications of transport systems occurred in two major phases. The first centered on the development of canal systems and the second on railways. This period marked the development of the steam engine that converted thermal energy into mechanical energy, providing an important territorial expansion for maritime and railway transport systems.

From the perspective of land transportation, the early industrial revolution faced problems as inland distribution was unable to handle the growing quantities of raw materials and finished goods. Roads were commonly unpaved and could not be used to effectively carry heavy loads. Although improvements were made on road transport systems in the early 17th century, such as the Turnpike Trusts in Britain (1706), and the development of stagecoaches, this was not sufficient to accommodate the growing demands on freight transportation. By the 1820s turnpikes greatly improved overland transportation but roads were not profitable if used to haul anything except compact and valuable goods. In a horse drawn era, road economics were clearly disadvantageous.

Beginning with the 1760s a set of freight shipping canals were slowly built in emerging industrial cores, such as England (e.g. Bridgewater Canal, 1761) and the United States (e.g. Erie Canal, 1825). The canal era was however short-lived as a new mode revolutionized and transformed inland transportation in the second half of the 19th century.

Steam railway technology initially appeared in 1814 to haul coal. It was found that using a steam engine on smooth rails required less power and could handle heavier loads. The first commercial rail line linked Manchester to

Liverpool in 1830 (a distance of 40 miles), and shortly after, rail lines began to be laid throughout the developed countries. Railroads represented an inland transport system that was at the same time flexible in its spatial coverage and that could carry heavy loads. As a result many canals fell into disrepair and were closed, as they were no longer able to compete with rail services.

In terms of international transportation, the beginning of the 19th century saw the establishment of the first regular maritime routes linking harbors worldwide, especially over the North Atlantic between Europe and North America. Many of these long distance routes were navigated by fast Clipper ships, which dominated ocean trade until the late 1850s. Another significant improvement resided in the elaboration of accurate navigation charts where prevailing winds and sea currents could be used to the advantage of navigation. Regarding steamship technology, 1807 marks the first successful use of a steamship, Fulton's North River / Clermont on the Hudson servicing New York and Albany. In 1820, the Savannah was the first steamship (used as auxiliary power) to cross the Atlantic, taking 29 days to link Liverpool to New York. The first regular services for transatlantic passengers transport by steamships was inaugurated in 1838, followed-up closely by the usage of the helix, instead of the paddle wheel, as a more efficient propeller (1840). The gradual improvement of steam engine technology permitted longer and safer voyages, enabling steamships to become the dominant mode of maritime transportation.

6.1.3 Emergence of Modern Transportation Systems (1870-1920)

By the end of the 19th century, international transportation undertook a new growth phase, especially with improvements in engine propulsion technology and a gradual shift from coal to oil in the 1870s. Although oil has been known

for centuries for its combustion properties, its commercial use was only applied in the early 19th century. Inventors started experimenting engines that could use the cheap new fuel. Oil increased the speed and the capacity of maritime transport.

The increasing size of ships, the outcome of advances in shipbuilding, imposed massive investments in port infrastructures, such as piers and docks to accommodate them. The harbor, while integrating production and transshipping activities, became an industrial complex around which agglomerated activities using ponderous raw materials. This period also marked the golden era of the development of the railway transport system, as railway networks expanded tremendously and became the dominant land transport mode both for passengers and freight. As the speed and power of locomotives improved and as the market expanded, rail services became increasingly specialized with trains entirely devoted to passengers or freight. Rail systems reached a phase of maturity by the early 20th century.

Another significant technological change of this era involved urban transportation, which until then solely relied on walking and different types of carriages (mainly horse drawn). The significant growth of the urban population favored the construction of the first public urban transport systems. Electric energy became widely used in the 1880s and considerably changed urban transport systems with the introduction of tramways, notably in Western Europe and in the United States. In large agglomerations, underground metro systems began to be constructed, London being the first in 1863. The bicycle, first shown at the Paris Exhibition of 1867, was also an important innovation which changed commuting in the late 19th century. Initially, the rich used it as a form of leisure, but it was rapidly adopted by the working class as a mode of transportation to the workplace.

6.1.4 Fordism, the period 1920 -1970

The Fordist era was epitomized by the adoption of the assembly line as the dominant form of industrial production an innovation, which benefited transportation substantially. The internal combustion engine, or four-stroke engine by Daimler (1889), which was a modified version of the Diesel engine (1885), and the pneumatic tire (1885) by Dunlop made road vehicle operation faster and more comfortable. Compared with steam engines, internal combustion engines have a much higher efficiency and use a lighter fuel--petrol. The internal combustion engine permitted an extended flexibility of movement with fast, inexpensive and ubiquitous (door to door) transport modes such as automobiles, buses and trucks.

Although the first balloon flight took place in 1783, no practical applications for air travel were realized until the 20th century due to the lack of propulsion. The first propelled flight was made in 1903 by the Wright brothers, which inaugurated the era of air transportation. The initial air transport services were targeted at mail, since it was a type of freight that could be easily transported, and initially proved to be more profitable than transporting passengers. The year 1919 marked the first commercial air transport service between England and France. The 1920s and 1930s saw the expansion of regional and national air transport services in Europe and the United States with successful propeller aircrafts, such as the Douglas DC-3.

The application of the gas turbine principle led to the development of jet engines. 1952 marks the beginning of commercial jet services with the Comet, but a design flaw grounded the plane the following year. In 1958, the first successful commercial jet plane, the Boeing 707, entered the market and revolutionized international movements of passengers, marking the end of passenger transoceanic ships and replacing propeller planes for long distance

services. The jet plane enabled the setting of time-dependent trade relations between producers across the world (such as electronics), created a long distance market for perishables (fruits and vegetables) and supported the development of mass tourism.

6.1.5 Post 1970 era

In a post-Fordist system, the fragmentation of the production, organizing an international division of labor, as well as the principle of "just-in-time" increased the quantity of freight moving at the local, regional and international levels. This in turn required increasing efforts to manage freight and reinforced the development of logistics, the science of physical distribution systems. Containers, main agents of the modern international transport system, enabled an increased flexibility of freight transport, mainly by reducing transshipment costs and delays. Containers were initially applied to land transport but saw the opportunity of using container shipping as an alternative to acute road congestion in the early 1950s. The initial attempts at containerization thus aimed at reducing maritime transshipment costs and time. Before containerization, a cargo ship could spend as much time in a port being loaded or unloaded as it does at sea. Later on, the true potential of containerization became clear when interfacing with other modes became an operational reality, mainly between maritime, rail and road transportation.

The first containership set sail in 1956 from New York to Houston and marked the beginning of the era of containerization. By the early 1980s, container services with specialized ships (cellular containerships, first introduced in 1967) became a dominant aspect of international and regional transport systems, transforming the maritime industry. The container revolution was concomitant with globalization by supporting an increasingly complex system of trade involving parts, manufactured goods and even

commodities. Few other transport innovations had such an impact on the global economic landscape.

Air and rail transportation experienced remarkable improvements in the late 1960s and early 1970s through massification and network developments. The first commercial flight of the Boeing 747 between New York and London in 1969 marked an important landmark for international transportation (mainly for passengers, but freight became a significant function in the 1980s). This giant plane could transport around 400 passengers, depending on the configuration. It permitted a considerable reduction of air fares through economies of scale and opened intercontinental air transportation to the mass market. At the regional level, the emergence of high-speed train systems provided fast and efficient inter-urban services, notably in France (1981; TGV; speeds up to 300 km/hr); and in Japan (1964; Shinkansen; speeds up to 275 km/hr). More recently, high speed train systems have been constructed in China, Korea and Taiwan.

The current period is one in which transportation modes heavily depends on fossil fuels and road transportation has assumed dominance. The oil crisis of the early 1970s induced innovations in transport modes and the reduction of energy consumption and the search for alternative sources of energy (electric car, adding ethanol to gasoline and fuel cells). As a result alternative energy-using modes are operating.

6.2 The National Perspective

Despite our extensive search for published materials which describe the historical development of modern transport system in Ethiopia, nothing much could be obtained. However, this study attempts to present a brief account of the development of the four modes of

transport based on information collected from different unpublished sources.

6.2.1 Road Transport³⁵

In ancient Ethiopia, land transport was handled with the help of pack animals. Caravans travel, on average, 20 kilometers pay day. Since there were no such things as hotels then, the merchants had to carry their own food when they set out for their journey.

Due to Emperor Menelik II's desire to improve the existing animal-driven transport system, he ordered the expansion of roads used by animal-driven carts in 1900. The improvement was made on the 60-kilometer long road running from Addis Ababa to Addis Alem. The road, which was the first to be built in Ethiopia's modern history, was meant to better serve animal-driven carts.

The Emperor imported two vehicles into the country. However, there are controversies as to when automobiles were introduced to Ethiopia. Tajebe's paper revealed that it was in 1899. The cars were manufactured by British and Germany. On their way to Addis Ababa they took Djibouti-Dire Dawa-Addis Ababa corridor. They were carried by train from Djibouti – Dire Dawa and driven on road from Dire Dawa to Addis Ababa. For the building of roads, Menelik II also imported road construction machinery.

Since the era of Menelik, roads had continued to be built. Before the Italian invasion (the 1935 invasion), the total constructed dry weather roads in the country reached 6326 km. During the occupation, a significant mileage of

³⁵ Tajebe Beyene. 1979. Road Transport, beginning and development status, Amharic version, November 1979 EC.

roads was built in the different parts of the country. After the end of the invasion, the destroyed roads were rehabilitated and new ones were built, thereby increasing the mileage of roads in the country. Similarly, the number of vehicles and transport services had expanded covering wider parts of the country.

6.2.2 Railway Transport³⁶

The Ethio-Djibouti railway was initially named the Ethiopian government Railway during the reign of Emperor Menelik II. The Emperor gave a concession to a Swiss born Alfred Ilg, who was by then a councilor to the emperor, for the construction of a rail line running from Djibouti to Entoto (Addis Ababa) via Harar, and then to the white Nile, via Kaffa. It was meant to transport gold, coffee, and ivory from the western part of Ethiopia to export market.

The French government had expressed its approval for the starting of the construction of a railway from Djibouti [to Addis Ababa] and the construction work started on the 1st of December 1897. The French government entered into a railway concession agreement with Menelik II on the 7th of February 1902 and the first train named Awraris arrived at Dire Dawa on 23rd of December 1902.

The second railway concession agreement was concluded in January 1908, between the French government and Ethiopia and the transport service started from Djibouti to Addis Ababa on 21 June 1921 covering total length of 781 km single track lane, of which 681 km stretch in Ethiopia and the remaining 100 km in Djibouti. Since then, no improvement has been made on the sub-sector; it had even come to a standstill.

³⁶ Ethiopia and Djibouti railway enterprise

6.2.3 Maritime Transport³⁷

Ethiopia has had long tradition of mercantile trade with countries on both sides of the red sea and even further south along the Arabian Peninsula. However, trade was conducted by locally built rafts and boats with virtually no centralized control and guidance. As modern transport, maritime gained recognition only after the end of the Italian occupation, a maritime administration office vested with the responsibility for the administration and operation of the ports of Assab and Massawa was established in 1953.

Ethiopia, for the first time, started acquiring modern vessels under its own flag at the time when the Ethiopian shipping lines share company was incorporated under the laws of Ethiopia and started operation in 1964.

During Haile Selassie's regime, there was no restriction on private sectors' participation in providing shipping services. However, in 1975, the Dergue restricted sea transportation activity to the mandate of the government. Accordingly, ESL was re-established as a public corporation by Legal Notice No. 80/1983. The total ban on private participation in sea transport was relaxed in 1990 to apply only to "large scale shipping". This decree remains in action during the current EPRDF-led government through proclamation issued on May 25, 1992, which states that large scale shipping is an activity to be undertaken by government only.

Inland Water Transport

Of the various surface water resources, only very few, namely, Baro-Akobo-Sobat river, some parts of Omo, Wabi Shebelle and Genale rivers provide

³⁷ Ministry of Transport and Communication, September 1993, maritime analysis: **sub-sectoral** analysis, unpublished paper

some forms of transport services. They are not sufficiently developed to provide adequate inland transport services.

Development of Dry Ports

Following the independence of Eritrea in 1993, Ethiopia became land locked. Hence, the country has to depend on transit countries—mainly Eritrea and Djibouti—to transport the bulk of its merchandize, both export and import. Since the 1998/99 border conflict with Eritrea, Djibouti remains to be the single major transit country for Ethiopia.

The dependence of Ethiopia on a single transit country has been costing the country a lot. Among the costs: risks of suspension; unnecessary monopolistic power of port owners in increasing prices and levying un necessary fees; regulations that affect the interest of Ethiopia, high costs related to transit transport, port handling, storage, procedures in customs clearance and other related, time consuming documentation processes are the major ones. The problems are underpinned by both infrastructural and non-infrastructural barriers.

To overcome some of the problems, Ethiopia has established dry ports within its national boundary. Dry ports are considered as inland container terminals or inland clearing depots. Although dry ports have been considered for all the corridors—namely, Djibouti, Berbera, Port Sudan and Mombassa—the Djibouti corridor is given priority. Consequently, Semera and Modjo dry ports have started operation. The Modjo dry port is located at 75 km east of Addis Ababa, while Semera dry Port is located at 592 km north-east of the capital.

6.2.4 Air Transport³⁸

Ethiopia was the first country in Africa to establish and operate its own air transport system. Ethiopian Air Lines was founded on 21 December 1945, with aid from both Transcontinental Air Transport and Western Air Express, which later merged into TWA.

The airline commenced operations on 8 April 1946. Its maiden flight operated the Addis Ababa–Asmara–Cairo route using one of the five Douglas C-47 Sky Trains acquired from the US Government. This route was later operated on a weekly basis. The Sky Trains were initially intended for military use. Ethiopian operated them in a mixed passenger-cargo configuration. It was therefore common practice for the company to accommodate both passengers and cargo in the same cabin during the early years.

At the beginning, the airline relied upon American pilots, technicians, administrators and accountants. From 1971 onwards, however, the Airline has managed to operate without foreign assistance.

Since its establishment, the Airline has kept improving in terms of the number of trained personnel, number of aircrafts, domestic airports and international destinations. As of December 2011, for instance, the passenger network comprises 36 cities in Africa – seventeen of them within Ethiopia – 8 in Europe and the Americas, and 15 in the Middle East and Asia. Likewise, the cargo network serves 12 destinations in Africa, 6 in the Middle East and Asia, and 2 in Europe.

³⁸ http://en.wikipedia.org/wiki/Ethiopian_Airlines accessed February 23, 2012.

Chapter Seven

The Current State of the Transport Sector

This chapter assesses the development of the transport sector, disaggregated into two broad categories: transport infrastructure and transport services. The assessment attempts to look into the various modes of transport under each category.

7.1 Transport Infrastructures

The transport infrastructure comprises roads, railways, ports (dry ports) and airports (international as well as domestic). The report presents the development achieved over the last decade and the current status of the sector.

7.1.1 Road

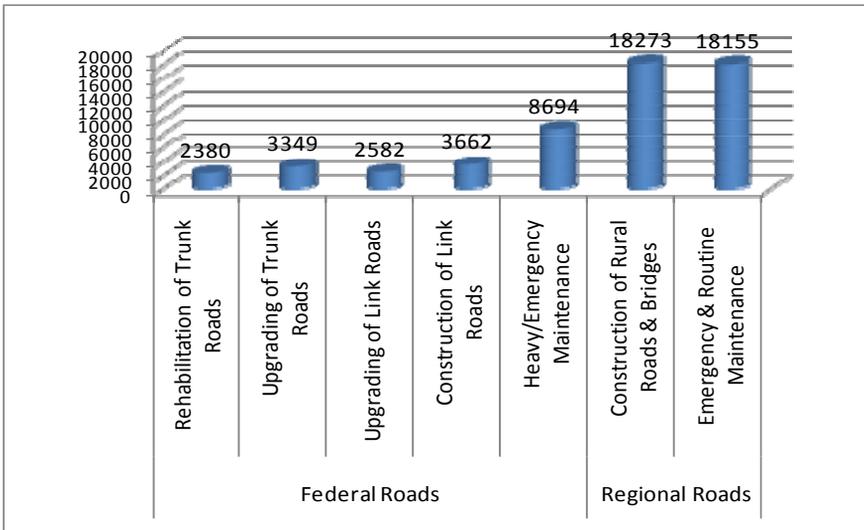
Road networks play key roles in the socio- economic development of a country. The development of a country, in turn, helps to further expand the existing network, and improve the quality of the existing infrastructure and introduce new modes.

Ethiopia has been expanding its road³⁹ network over the last decade through designing and implementing a series of road sector development programs (RSDPs). The current program is RSDP IV.

³⁹ Roads are classified into five categories according to functions: 1) Trunk roads: roads radiating from Addis Ababa to major regional cities and neighboring port cities; 2) Link roads: roads linking major towns within the regions; 3) Access roads: roads which branch-out from trunk roads and link roads and connect to major towns and economic activity areas; 4) Collector roads: rural roads which **connect** small towns in regions; 5) Feeder roads: very low-

In the period between 1997 and 2011, rehabilitation, upgrading, construction and maintenance of federal and regional roads have been undertaken. In the review period 2380 km, 5931km, 3662km and 8694km of rehabilitation, upgrading, construction and heavy maintenances of federal roads have been carried out, respectively. With regard to regional roads, the construction and rehabilitation of 18273km and 18155 km of roads have been carried out, respectively. These activities have helped to improve the people’s access to roads and the condition of roads in the country (figure 7.1)

Figure 7.1: Rehabilitation, Up-grading, Construction and Maintenance of Federal and Regional Roads (1997-2011), in km



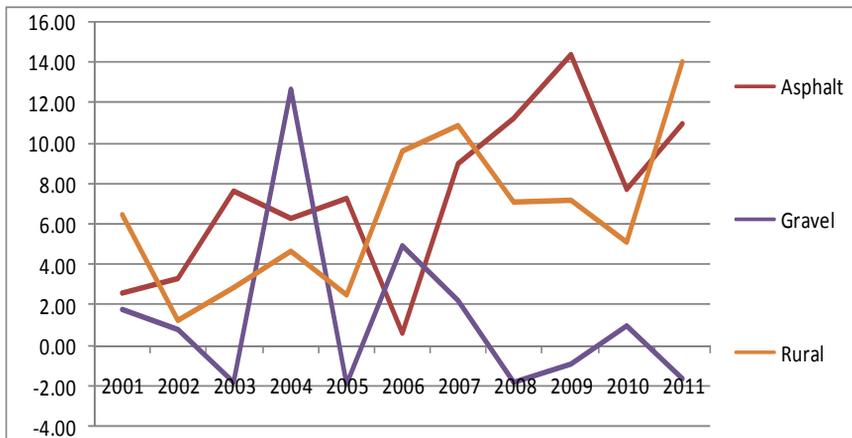
Source: ERA

level roads aimed at supporting rural populations to have access to social and economic services.

Owing to the series of road sector development programs started in 1997, the stock of roads has increased. For instance, the road length, excluding woreda roads, has increased from 26.6 thousand km in 1997 to 53.14 thousand km, thereby doubling the length of the road a decade and half ago, while the size of roads, including woreda roads has increased from 26.6 thousand km in 1997 to 54.0 thousand km in 2011, registering more than double growth (Table 7.1).

With regard to the types of roads, asphalt, gravel and rural roads have been expanding, on the average, by 7.4 percent, 1.4 percent and 6.5 percent per annum, respectively, over the period 2001-2011. With the exception of gravel roads, the other two road types have shown an upward trend. The slower growth or the negative growth of gravel surfaced road may be due to the turning of gravel roads into asphalt surface or serious damage to gravel road thereby losing its gravel road status (Figure 7.2).

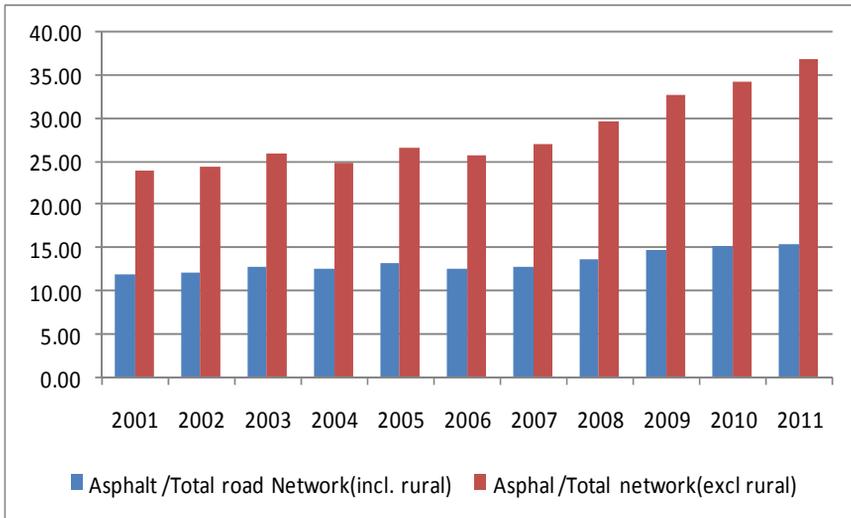
Figure 7.2: Expansion of Asphalt, Gravel, and Rural road, growth in %



Source: ERA and Own Computation

The development of the road sector can be seen by the ratio of paved roads to the total stock of roads. In this regard, although the length of asphalt covered roads has been growing over the last decade, the share of asphalt relative to the total road stock has remained within 12-15 percent range, more or less, indicating the existence of equally increasing non-asphalt surfaced roads in the country. Nonetheless, excluding the rural roads, the share of paved roads relative to the total stock of roads has been increasing over time. This shows that major roads linking major urban areas, which was gravel-surfaced, have been covered by asphalt (Figure 7.3).

Figure 7.3: Asphalt to total Road Network, share in %



Source: ERA and Own Computation

The expansion in the length of roads in kilometers is one indicator of the development of the sector. The issue is whether the increasing length of road infrastructure is sufficient enough to create reasonable access to the

population, given the land size, topography, as well as the settlement pattern and growth of the population of the country. To this end, it is important to see the stock of road network in terms of per square kilometer and thousands in population estimate.

Statistics show that significant achievements have been registered in this regard. The road density for every 1000 square km has increased from 24km in 1997 to 49.1 km in 2011, indicating a growth rate of more than 100 percent. In terms of every 1000 people, it has moved from 0.49 km in 1997 to 0.66km in 2011, indicating 35 percent growth over the same period. In terms of access to all weather roads within 5 Km, the coverage has increased from 79 percent in 1997 to 61.2 percent in 2011, indicating a 23 percent improvement. Average distance to all weather roads has improved from 21 km in 1997 to 10.2 km in 2011, indicating 51 percent improvement over the same period (Table 7.1).

Since the roads that have been constructed at some time in the past may have gone out of service currently, it is important to pay attention to the conditions of the roads. The proportion of asphalt roads, gravel roads, rural roads relative to the total road network in good conditions has improved from 17 percent, 25 percent, 21 percent and 22 percent in 1997 to 74 percent, 55 percent, 54 percent and 57 percent in 2011, respectively. Except for the asphalts, slightly less than 50 percent of the stock of roads is not in good condition (Table 7.1).

Table 7.1: Road Length, Road Density, Condition of Road and Access to Road

Indicators	1997	2011	%Change
Road Length (in km) excluding Wereda Roads	26,550	53,143	100
Road Length (in km) including Wereda Roads	26,550	53,997	103
Road Density I/1000 sq.km	24 km	49.1 km	105
Road Density I/1000 population	0.49 km	0.66 km	35
Proportion of Area more than 5 km from All Weather Road	79%	61.20%	23
Average Distance to all weather road	21km	10.2km	51
Proportion of Asphalt Roads in Good Condition	17%	74%	57
Proportion of Gravel Roads in Good Condition	25%	55%	30
Proportion of Rural Roads in Good Condition	21%	54%	33
Proportion of Total Road Network in Good Condition	22%	57%	35

Source: ERA

Expansion of transport infrastructure to rural areas is critical in a country which generates about 50 percent of its national income from the infrastructure. Improved rural road access provides the rural people the opportunity to reach markets and have access to effective socio-economic services. Improving rural road access can also serve as an effective poverty-alleviation tool.

Given its diverse topography, settlement patterns of the population and the level of resources required, it is difficult to provide a satisfactory road network for the whole country, considered in short- or medium-run terms. Thus, the appropriate alternative to reach the rural community would be through construction of community roads.

To this end, the Ethiopian Rural Travel and Transport Program (ERTTP) was launched in 2001. ERTTP's strategy includes transport and non-transport interventions. The transport solutions include both the improvement of access through the development of road infrastructure and the improvement of mobility by increasing the availability of affordable means of transport and transport services, while the non-transport interventions include education, health and other social services. The emphasis of ERTTP was on constructing low-cost roads, footpaths, and trails and providing other infrastructure that reduce the burden of travel and transport, such as provision of water wells, grinding mills, health posts, etc. The program has been in implementation in all the regional states except the city administrations of Addis Ababa, Dire Dawa and Harari regional state.

ERTTP's budget is utilized for 4 broad categories: road construction, mobility, non-transport social services, and capacity building projects. Each region has the choice to use the budget for whatever component they find important. As a result, the shares of each category vary from one region to another. Except Somali and Gambella regions, all the regions have utilized the largest share of the total budget for rural road construction. In Gambella, however, the largest share went to capacity-building both at the woreda and regional levels. In Somali, the largest share went to the non-transport sector. The smallest share went to the mobility component of the program (Table 7.2).

Table 7.2: Transport and Non-transport expenditures in ERTTP, Share in %

Regions	Road	Mobility	Non-Transport	RRA capacity building	Woreda capacity building	Total capacity building	Total
Amhara	8176.8	16	3364.9			280.4	11838.1
Tigray	6500.2	11.5	1205	401.9	761.3	1163.2	8879.9
Ben-Gum	9560.2	183.8	1686.4				11430.4
Oromia	7784.2	95.6	1223	859	793	1652	10754.7
SNNPR	7267.8	97.1	1832.5	418	1239.3	1657.3	10854.8
Gambella	296	0	493.7	371.6	901.9	1273.5	2063.2
Afar	5692.8	0	2538.4	356.6	80	436.6	8667.8
Somali	1691.3	0	2019.8	745.6	258.3	1004	4715.1
Total	46969.3	404	14363.7	3152.7	4033.8	7467	69204.0
Share (in %)							
Amhara	69.07	0.14	28.42			2.37	100.0
Tigray	73.20	0.13	13.57			13.10	100.0
Ben-Gum	83.64	1.61	14.75			0.00	100.0
Oromia	72.38	0.89	11.37			15.36	100.0
SNNPR	66.95	0.89	16.88			15.27	100.0
Gambella	14.35	0.00	23.93			61.72	100.0
Afar	65.68	0.00	29.29			5.04	100.0
Somali	35.87	0.00	42.84			21.29	100.0

Source: Ministry of Transport and Ethiopian Roads Authority, 2011, Cumulative Summary Status Report of ERTTP, March 2011

According to the Rural Access Index (RAI), rural access has improved. RAI measures the number of rural people who live within two kilometers (typically equivalent to a walk of 20-25 minutes) of an all-season road as a

proportion of the total rural population. The average RAI for the whole country is currently around 27%, a significant improvement from 13 percent in 1997 at the outset of the RSDP (Table 7.2).

Table 7.3: Rural Access Index Values

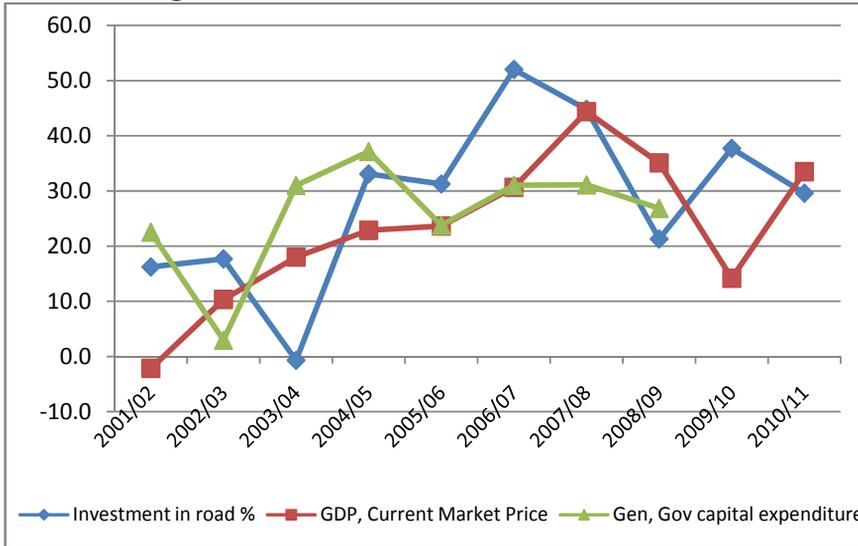
Year	Inhabited Area, in '000 sq km	Rural Population, in 000	Rural Pop Density	Road Network	Rural Pop within 2km access	Rural Access Index (%)
1997	796	46,493.6	58	26,550	6,203,041	13
2002	796	53,776.0	68	33,297	8,997,887	17
2007	796	61,259.1	77	42,429	13,061,124	21
2010	796	65,680.2	83	48,793	16,104,158	25
2011	796	68,143.0	86	53,997	18,483,797	27

Note: The rural population is assumed to be 80% of the total Population

Source: ERA, 14 years performance of RSDP, November 2011,

In the period between 2001/02 and 2010/11, GDP, investment in road sector and government capital expenditure has been growing, on average, by 23 percent, 28.3 percent and 25.8 percent, respectively. This shows that investment in the road sector has been growing at a rate higher than the growth in GDP and capital expenditure, implying the higher attention given to the sector (figure 7.4).

Figure 7.4: Investment in Road, GDP and Capital Expenditure, growth in %



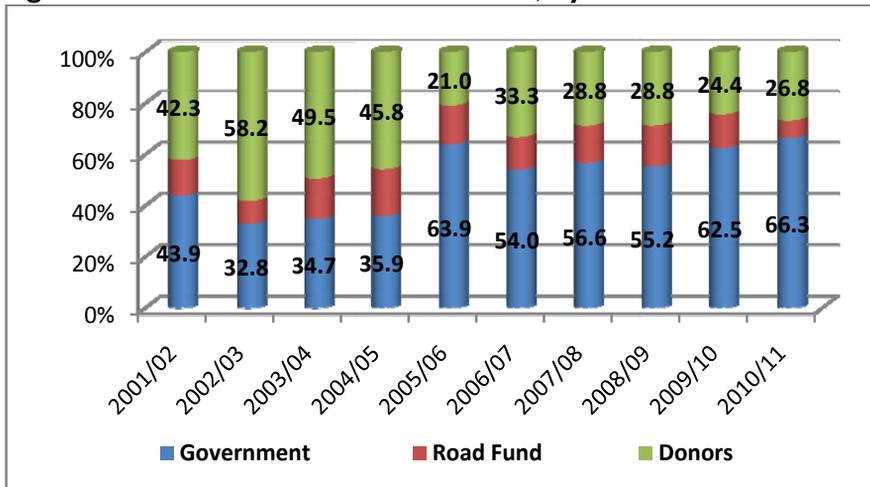
Source: MOFED and ERA, various issues

Not only the growth but also the share of road sector investment in the total capital expenditure and GDP has been significant. Investment in the road sector as a share of GDP has increased from 3.0 percent in 2001/02 to 3.8 percent in 2010/11, indicating an average, increase of 3.3 percent over the period. The share of road sector investment in the total capital expenditure has witnessed some fluctuation, but has shown a general upward trend. Its share in total capital expenditure stood at 35.7 percent in 2008/09, taking over a third of the capital budget of the country.

To understand the sustainability of the present growth momentum in road sector development, knowledge of the sources of finance is critical. According to ERA, the road sector development programs have been mainly financed by

two sources: government treasury and donors. The share of donor support in financing road sector development has declined from about 42.3 percent in 2001/02 to 26.8 percent in 2010/11, while the share of government treasury has increased from 43.9 percent in 2001/02 to 66.3 percent in 2010/11, indicating the high capacity of the government in financing additional road development programs in the country (Figure 7.5).

Figure 7.5: Investment in the Road Sector, By Financers



Source: ERA

7.1.2 Railways

Despite the importance of rail transport for the development of the competitiveness of the economy, the sector has been neglected for so long a period of time. Ethiopia’s existing 781 km long metre-gauge railway linking Addis Ababa with Djibouti is a century old. In the last many decades no improvement has been made on the railway and it is defunct, especially that stretch between Addis Ababa and Dire Dawa.

Since 2011, however, the sector has drawn significant attention from the government. As a result, investment activities have started. In GTP, the Government has planned to invest aggressively in constructing railway lines across the country and implementation has started.

The railway targets for the GTP plan period are:

1. Construction of a total of 2395 km of national railway network, out of which about 1807.9 km will be completed (Addis Ababa-Dire Dawa-Deweale 656; Awash-Woldiya-Mekelle 556.2km; Woldiya-Semera-Galafi 256.4 km and Addis Ababa-Ejaji-Jimma-Bedele 339.3 km), while efforts will be exerted to construct the remaining 587.1 km of network (Modjo-Konso-Weyto).
2. Construction of 34 km of light railway network along two corridors in Addis Ababa (from east to west and north to south) providing the capital with a mass- transit system.

Overall, 8 railway routes have been identified to construct a 4793 km stretch of railway lines in the different parts of the country, of which, 2395 km will be constructed in the five-year GTP period. The routes are:

-
- Route 1: Addis Ababa (Sebeta)-Modjo-Awash-Dire Dawa-Djibouti, 556 km
 - Route 2: Modjo-Shashemene/Hawasa-Konso-Woyito, including Konso-Moyale, 995km
 - Route 3: Addis Ababa-Ejaji-Jimma-Guraferda-Dima directed to Boma, 637 km
 - Route 4: Ejaji-Nekemte-Asossa-Kurmuk, 460Km
 - Route 5: Awash-Kombolcha-Mekelle-Shire, 757 Km
 - Route 6: Fenoteselam-Bahir Dar-Wereta-Weldia-Mile-Djibouti, 796Km
 - Route 7: Wereta-Azezo-Metema, 244 Km
 - Route 8: Adama-Indeto-Gasera, 248 Km
-

Source: ERDE

Currently, the Addis Ababa-Mi'eso, 317-km railway line construction has been underway since October, 2011 by a Chinese Company called CRGC. In parallel, the Mi'eso-Dire Dawa-Dewale, 339 km single track electrified line is also under construction, starting in December 2011, with the China Civil Engineering Construction Corporation financing these projects. The Ethiopian government covers 40% of the cost, while the balance comes from a soft loan from China.

The construction of light rail transit service in Addis Ababa is underway. The construction is has been contracted out to the Chinese company, CREC. It is expected that the first phase of the light rail transit project in Addis Abba will be finalized within a period of 30 months.

A 17.26km long railway will connect Ayat Village to the Defense forces Hospital, while 16.246km between Meskel Square and Kality and 3.875 km of railway will connect the areas between Lideta and Menelik Square. The Ethiopian government covers 40% of the financing, with the Chinese government covering the balance.

7.1.3 Water

Ethiopia has joined the landlocked countries league in Africa following the independence of Eritrea in 1991; thus there is no sea port to talk about. Instead, the report will take a look at the current state of the Dry Ports/Terminals constructed within the country's territory.

Among the planned dry ports to be constructed along the transit corridors, Modjo and Samara dry ports are currently in operation. The storage capacity of Modjo and Semera dry ports is 35 thousand tons and 20 thousand tons, respectively, in terms of container terminals. While in terms of RORO, the

capacity of Modjo is 3900 tons. Modjo and Semera dry ports have closed-warehouse capacity of 162 thousand and 108 thousand tons, respectively as of 2010/11. Due to the development of dry ports, some of the problems the country has been facing in relation to the flow of exports and imports have been alleviated to some extent (Table 7.3).

Table 7.4: Storage Capacity of Dry Ports as at 2010/11

Capacity	Type of Terminal					
	Container Terminal		RORO		Closed Warehouse	
	Modjo	Semera	Modjo	Semera	Modjo	Semera
Designed Capacity in TEU, No & Ton	35,000	20,000	3,900	-	162,000	108,000
Attained in TEU, No & Ton	16,787	1,431	460		-	1,105

Source: Dry Port Service Enterprise (DPSE)

There are also expansion activities by DPSE on the two operational dry ports and investment plans for the establishment of other dry ports in the different part of the country. All these would help to expand the capacity of dry ports.

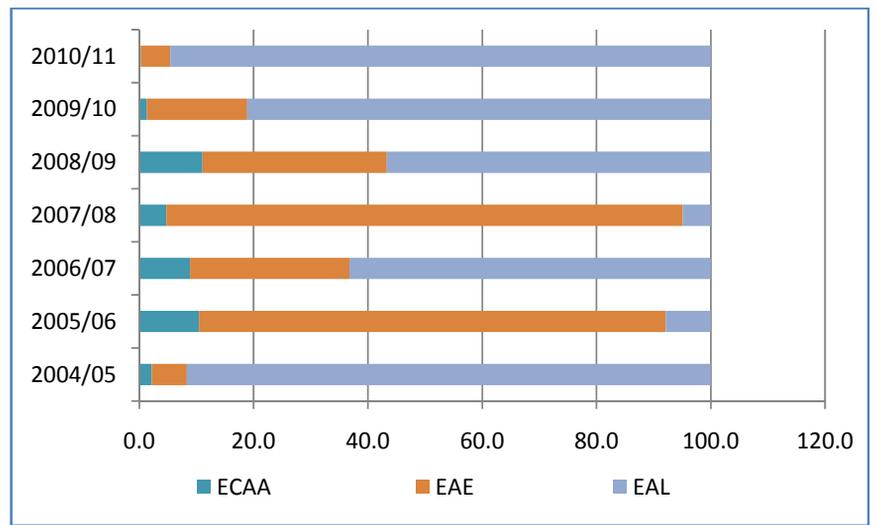
7.1.4 Air

Air transport infrastructure includes the number of airports, their runways, terminal and other related installations. Currently, Ethiopia has four International Airports (Addis Ababa Bole, Dire Dawa, Mekelle and Bahir Dar) and more than thirteen domestic airports. As of the end of 2010, there are 10 functional domestic airports: Arba Minch, Asossa, Axum, Gambella, Gode, Gondar, Jijiga, Jimma, Humera and Lalibella.

So as to expand the capacity of air transport infrastructure, the Ethiopian Airport Enterprise (EAE), Ethiopian Civil Aviation Authority (ECAA) and Ethiopian Air Lines (EAL) have been investing in the sector for the last several years. According to ECAA, the total investment for the development of airport infrastructure is estimated at birr 6.3 billion in the period between 2004/05 and 2010/11.

Overall, the share of investment by Ethiopian Airlines is higher than that of Ethiopian Airports Enterprise (EAE), which, in turn, is higher than the share of Ethiopian Civil Aviation Authority (ECAA). The investments were made in the construction of runways, terminals, and other construction and navigation facilities areas. As a result of these investments, the capacity of both international and domestic airports has made significant improvement (Figure 7.6).

Figure 7.6: Investment on Airport Infrastructure, share in %



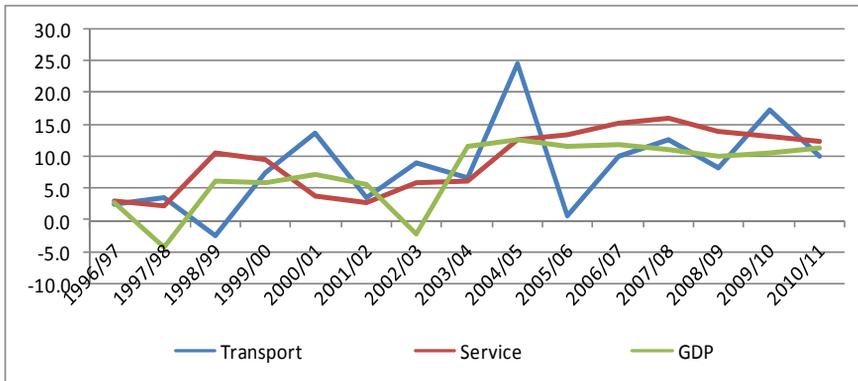
Source: ECAA

7.2 Transport Services

7.2.1 The Contribution to GDP

In the period (1996/97-2010/11), real GDP, service as a whole and transport sectors have been growing, on average, by 7.5 percent, 9.4 percent and 8.5 percent per annum, respectively. This shows that the transport sector has been growing by less than the service sector growth rate, but by more than the growth rate in the overall real GDP during the review period. Figure 7.6 shows that transport growth does not go in tandem with GDP growth, signaling the absence of direct correlation between them. In fact, transport service supports not only the production sector but also the service sector. For instance, in 2002/03, although there was drought and hence significant reduction in agricultural output and growth in real GDP, the transport sector witnessed positive growth rate. In the absence of growth in agricultural output, the increase witnessed in transportation services may be due to increased transporting of food aid from Djibouti ports to those parts of the country affected by drought (Figure 7.7).

Figure 7.7: Trends in Transport Sector, Service Sector and GDP growth in %



Source: MOFED

7.2.2 Employment Contribution⁴⁰

According to the 2005 labor force survey, the transport and communication sector has generated employment for about 0.5 percent of the total currently employed population aged ten years and above in the country. It is actually difficult to disentangle the net contribution of the transport sector since the data is merged with that of the communication sector. The employment generation varies between urban and rural areas. In urban areas, the sector generated about 3.5 percent, while for rural generated about 0.1 percent of the total employment. The sector is male-dominated. For instance, in the same year, of the total number of employees, male employment accounted for 0.8 percent while female employment account for only 0.1 percent.

7.2.3 Foreign Exchange Contribution

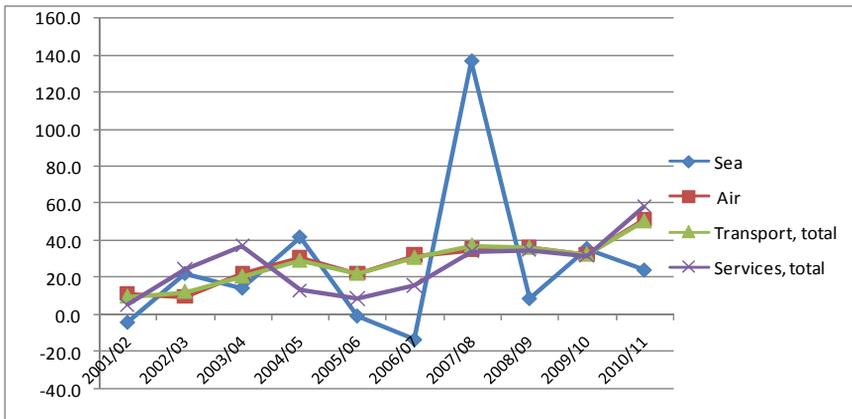
Ethiopia basically uses its air and water transport sectors to generate foreign exchange by exporting their services. Although the growth in the foreign exchange generated by Ethiopian Shipping Lines has been increasing over the last decade, the growth was erratic. However, overall, it has been growing, on the average, by 26.5 percent in the last decade. Negative growths have been witnessed in the years 2001/02, 2005/06 and 2006/07 (Figure 7.8). Ethiopian importers are compelled by regulation to use Ethiopian Shipping Lines except under some circumstances. In doing so the shipping line has been saving foreign exchange that would have gone to settle transport bill to overseas carriers. In so doing, it has been saving the foreign exchange that could have paid for foreign carriers. Clients, however, complain that ESL is charging them higher rate. while it is slow in delivering cargoes compared with other carriers. Thus, if the private sector is not allowed to use other cheaper and faster carriers, the ESLSE has to reduce its rates to bring itself to international parity and improve its delivery speed.

⁴⁰ CSA (2006), Reports on national labor force survey.

Ethiopian Air Lines (EAL) has registered growing foreign exchange generation in the last decade. The average growth witnessed for the decade has been 28.5 percent per annum (Table 7.4). Except for the year 2001/02, the registered growth has been positive and significant both for passengers and cargo services (Figure 7.8). Within the air transport services, the share of passenger service has been increasing, while the share of cargo services remained at more or less the same rate.

Of the total service-sector export receipts, the share of EAL, ESL and others has been, on the average, 95.0 percent, 3.2 percent and the remaining balance, respectively, over the decade. Of the total service sector export receipts, the share of the transport sector, which in effect is the share of airlines, is about 47.4 percent. The share of transport has increased over time to reach 51.1 percent in 2010/11. Thus, the impact of opening-up the sector for international competition would be potentially positive for EAL but adverse for ESL, the now Ethiopian Shipping and Logistics Service Enterprise (ESLSE).

Figure 7.8: Export Receipts from Service, Transport total, Sea and Air transports



Source: National Bank of Ethiopia (NBE)

Table 7.4: Transport Service Exports, by Modes

Year	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Growth(in %)										
Sea Transport										
Freight	-4.1	22.2	14.3	41.8	-0.7	-13.4	136.5	8.7	35.6	24.0
Air Transport										
Passenger	18.0	13.3	21.4	35.1	23.6	34.8	37.0	30.1	29.7	53.2
Freight	-2.6	13.4	33.4	4.2	44.3	29.2	10.0	46.6	51.5	71.9
Other	-14.4	-20.0	12.3	34.4	-20.3	-10.0	81.0	150.2	38.3	3.9
Air total	11.0	9.8	22.1	31.1	22.5	32.1	35.2	36.8	32.6	51.4
Transport, Total	9.7	12.3	20.5	29.0	22.1	30.6	37.3	36.0	32.5	50.2
Share (in %)										
Sea/Transport total	3.8	3.4	3.6	3.5	3.8	3.1	2.1	3.5	2.8	2.9
Air /Transport total	94.4	92.3	93.6	95.1	95.4	96.5	95.1	95.6	95.7	96.4
Passenger/Air	78.3	80.7	80.3	82.7	83.4	85.2	86.3	82.1	80.3	81.3
Freight /Air	11.3	11.6	12.7	10.1	11.9	11.6	9.5	10.1	11.6	13.2
Others/Air	10.5	7.6	7.0	7.2	4.7	3.2	4.3	7.8	8.1	5.6
Transport/Services exports	45.5	41.1	36.1	41.2	46.1	52.0	53.2	53.6	53.9	51.1

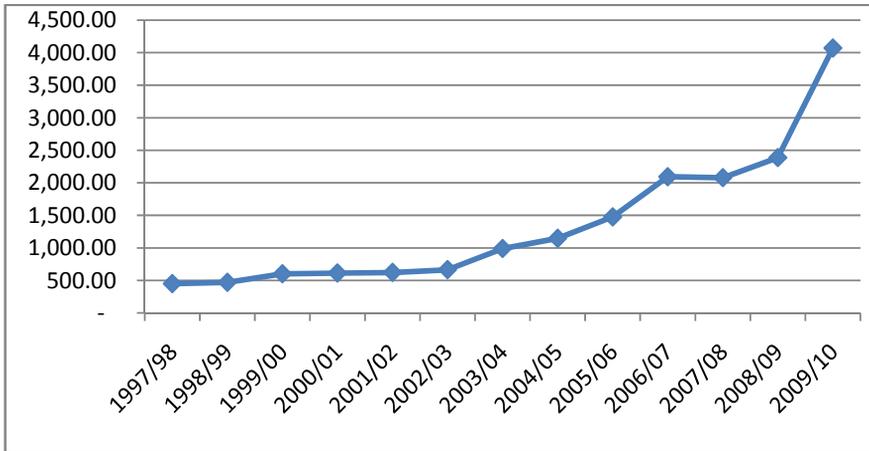
Source: NBE

7.2.4 Government Tax Revenue

A number of revenues are generated from the transport sector. However, due to the paucity of data, this report focuses on the revenue generated from importing transport equipment. There are various forms of taxes on vehicles. These include customs duty, excise, VAT on import of vehicles and accessories.

Trends in revenue from imports of vehicles and accessories in the form of customs duty, excise tax and VAT show increases in the period 1997/98-2009/10, implying a corresponding increased in the volume of import of vehicles. The total tax revenue from the import of vehicles and accessories had reached birr 4.1 billion in 2009/10, which was 22.7 percent of the total foreign trade taxes collected in the same year. This shows how much the tax income from vehicle-import is significant (Figure 7.9).

Figure 7.9: Tax Revenue from vehicle and accessories imports, in million birr



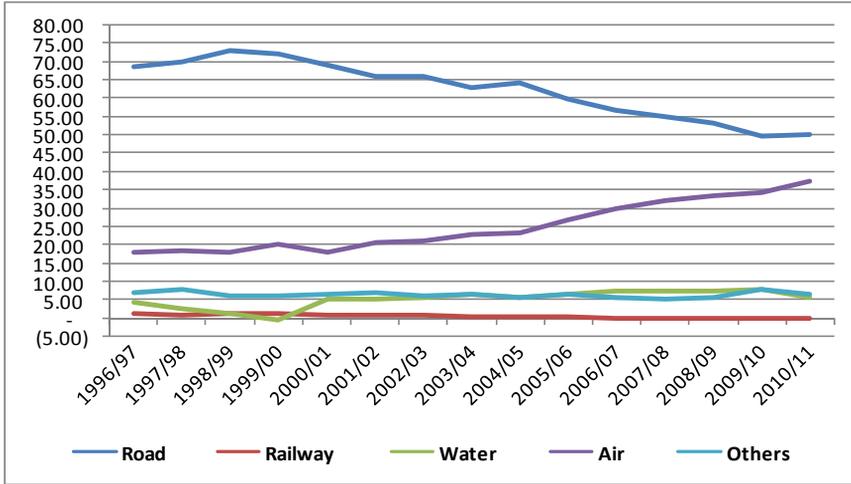
Source: MRCA

7.3 Transport Services by Modes

The share of the transport sector in the total GDP has remained more or less at about 4.2 percent over the last decade and a half. The share of transport in the total service sector, however, has slightly declined from its level of 10.8 percent in 1996/97 to about 9.5 percent in 2010/11. This indicates the relative better growth of the other service sub-sectors compared with the transport sector. According to the national accounts classification, there are five different modes of transport; namely road, rail, water, air and others.⁴¹ The shares of these sub-sectors in the total transport sector GDP are 50.1 percent, 0 percent, 5.5 percent, 37.4 percent and 7 percent, respectively in 2010/11. Over the indicated period (1996/97-2010/11), the share of road transport in the overall transport sector GDP has been declining, while that of air transport has been increasing. The share of water transport has been increasing slightly over the period while the share of railway transport has been declining, and even had come to a standstill at the end of the review period. Although EAL provides domestic air transport services, the increased share of air transport emanates from the expansion of international service activities. Since in-land water transport service is very limited, the contribution of the water transport service has been due to the role of the ESL, which has been handling the growing Ethiopian export and import activities of the country. The railway sub-sector of the country has, however, remained underdeveloped for long a period of time because of lack of due maintenance and upgrading that it needed. As a result, the railway transport service has come to a standstill since recently (Figure 7.10).

⁴¹ Others include other Supporting & Auxiliary Transport Activities and activities of travel Agencies

Figure 7.10: Trends in the share of different modes in total transport Sector GDP



Source: MOFED

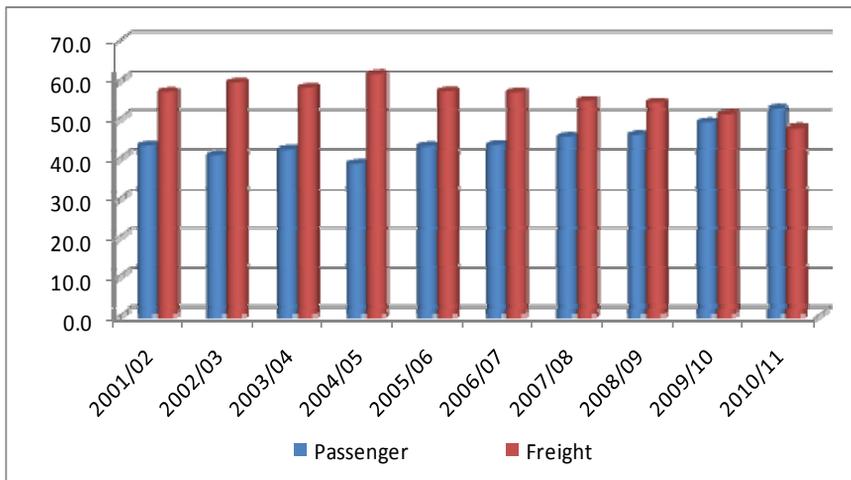
Ethiopia’s economy being predominantly agricultural, and because of lack of adequate modern infrastructure and means of transport, even today, in the rural areas, animal transport plays significant role in the country’s economy. According to national accounts estimate, animal transport accounts for about 1.2 percent of the total road transport services in the country and has been growing, of late, on the average, by 3 percent, particularly over the last decade and half.

7.3.1 Road

Value added in the road transport sector emanates from two sources: passenger and freight transport services. The share of passenger transport in the total value added of road transport has increased from 43.4 percent in

2001/02 to 52.1 percent in 2010/11, indicating an average annual increase of 2.4 percent over the period., while the share of freight transport value added has declined from 57percent in 2001/02 to 47.6 percent in 2010/11, meaning an average annual decline of 1.9 percent in the same period (Figure 7.11).

Figure 7.11: Value Added of road transport by Freight and Passenger, share in %



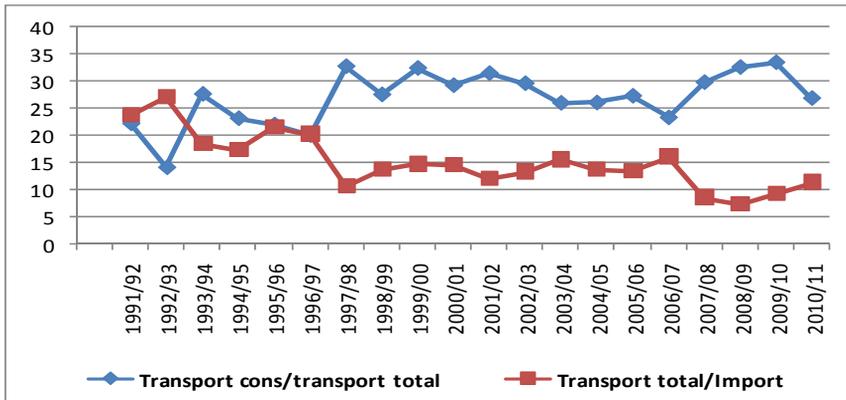
Source: MOFED

It is difficult to get the exact number of vehicles operating in the country by type and purpose. The literature points to the scarcity of both passenger and freight transport service to address the growing demands of the country.

However, the increase in the number of road transport vehicles can be captured by the growing import of bill on importing of transport equipment. As a Least Developed Country, Ethiopia relies on the rest of the world for capital goods, of which transport equipment constitutes one. According to the

system of national accounts, the classification of transport equipments into the consumption or capital goods category depends on the purposes they serve. Transport equipment is considered as capital good when it serves business and investment activities; otherwise it is considered as one component of consumer goods, like private service. The share of transport equipment for consumption, for instance private automobiles, has shown an upward trend over the period 1991/92-2010/11, indicating the lowering of transport vehicles as capital goods. With the recent establishment of local vehicle assembly enterprises, the trend showed slight declining in 2010/11. Transport share in the total import bill of the country has been declining over the review period, indicating the relative increase in the share of non-transport imports (Figure 7.12).

Figure 7.12: Transport equipment for consumption and capital, share in %

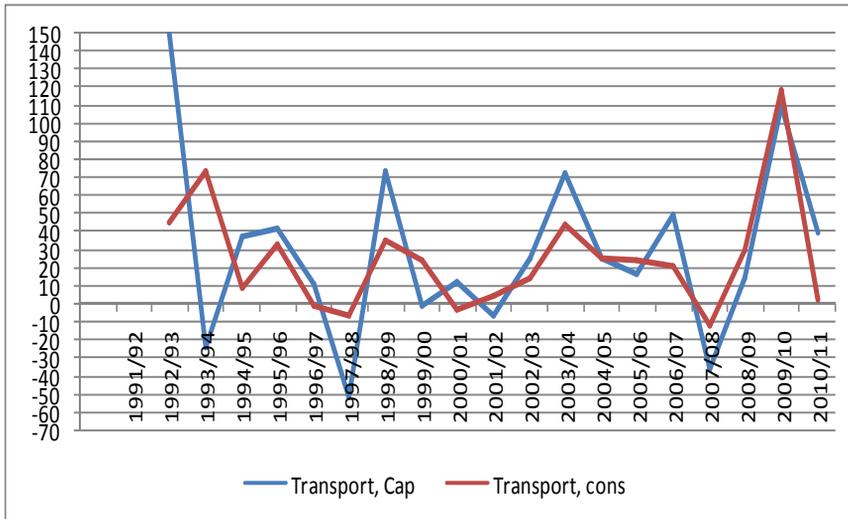


Source: NBE and Author's Computation

In actual fact, it is the growth of the capital transport equipment that supports the productive capacity of the economy and facilitates the domestic and international trade activities.

High fluctuations have been observed in the growth of imports in both capital and consumer transport goods. Despite the fluctuation, transport-capital has been growing, on the average, by 29.2 percent per annum, while transport-consumption has increased by 25.2 percent per annum over the period between 1991/92 and 2010/11. For the transport-capital goods, the highest growth rate was witnessed in 1992/93, which was probably due to the low base during the transition from the Dergue to the EPRDF regime, while the lowest in 1997/98 was probably due to conditions on the eve of the Ethio-Eritrean War. For the transport-consumption goods, the highest growth was witnessed in 2009/10, while the lowest was in 2007/08. The probable reason for the decline in the growth of import in 2010/11 may be increased vehicle assembly factories in the country producing and selling private automobiles and large public buses (Figure 7.13).

Figure 7.13: Transport Capital and Consumption, Growth in %



Source: NBE and Author's Computation

Car Assembly in Ethiopia

The other way in which the supply of vehicles can increase in the country is through the establishment of car assembly enterprises locally. Given the growing demand for vehicles and the rising cost of importing vehicles, a number of investors have registered to establish assembly factories. This activity will help to increase the supply of vehicles and saves the scarce hard currency. According to the data, for the period 1997- March 2012, a total of 48 investors have been licensed to engaged in car assembly business , of which only 4 companies (8.3 percent) have gone operational, the balance being in their pre-implementation phase (Table 7.5).

Table 7.5: Investment in Car Assembly, by type and status (March 04, 1997 - March 19, 2012)

Types	Operational				Total	
	N0. of Projects	% No. in total	Capital in ' 000 birr	% in total	N0. of Projects	Capital in 000 birr
Domestic	1	2.6	55,798	8.2	39	683,538
Foreign	3	33.3	60,989	41.8	9	145,989
Grand Total	4	8.3	116,787	14.1	48	829,527

Source: EIA

7.3.2 Railway

Railway plays critical role in the industrialization process of a country. In Ethiopia, however, the sector has been playing minimal role for the last so many decades. Its services have been declining and even limited to between Dire Dawa and Djibouti in both moving freight and passengers.

According to CSA, no improvement has been made in the sector in terms of increasing the number of rolling stocks, increasing length of the track and changing it into double tracks. Some of the contribution of the sector has been declining since recently. For example, employment has slightly declined, and the number of passengers carried has drastically declined from 103 thousand in 2005/06 to 35 thousand in 2009/10, indicating a three-fold decline. Similarly, the freight hauled by railway has drastically fallen from 123 thousand tons in 2005/06 to 2 thousand tons in 2009/10, which means nearly nil. In sum, the revenue of the sector has been lower than the expenditure it incurs to run the company, thereby indicating how it has been surviving by government subsidy. This is a sad story for a landlocked country and an economy which requires cheaper modes of transport to be able to compete in the international market (Table 7.6).

Table 7.6: The Performance of Ethio-Djibouti railways

	2005/06	2006/07	2007/08	2008/09	2009/10
Employment					
Ethiopian	1213			1078	1065
Foreigners	269			262	260
Passenger carried , in 000	103	126	106	55	35
Passenger km, in million	24	28	26	14	5
Freight carried, in 000 ton	123	73	76	20	2
Revenue					
Passenger	6000	7700	2450	700	2300
Freight	27400	15600	7050	7200	5700
Others	2600	3000	9700	23600	23300
Total revenue, in 000	36000	26300	19200	31500	31300
Total expenditure, in 000	43000	45900	42800	36500	36900

Source: CSA, Statistical abstracts, 2008 and 2010.

The static nature of the sector can be observed from the unchanged stock of transport equipment (trains) over a long period of time. According to CSA, the number of steam locomotives, electric and diesel rolling stock, passenger car, freight cars and auto rails has not changed over a long period of time and stayed at 5, 9, 27, and 468 respectively over the period 2005/06 - 2009/10 (Table 7.7).

Table 7.7: The Number of Rolling Stock

	2005/06	2006/07	2007/08	2008/09	2009/10
Length of Tracks (KM)	781	781	781	781	781
Rolling stock(in number)					
Steam locomotives	5	5	5	5	5
Electric and Dessile	9	9	9	9	9
Passenger car	27	27	27	27	27
Freight car	468	468	468	468	468
Autorails	3	3	3	3	3
Others	15	15	15	15	15

Source: CSA, Statistical Abstract, 2008 and 2010.

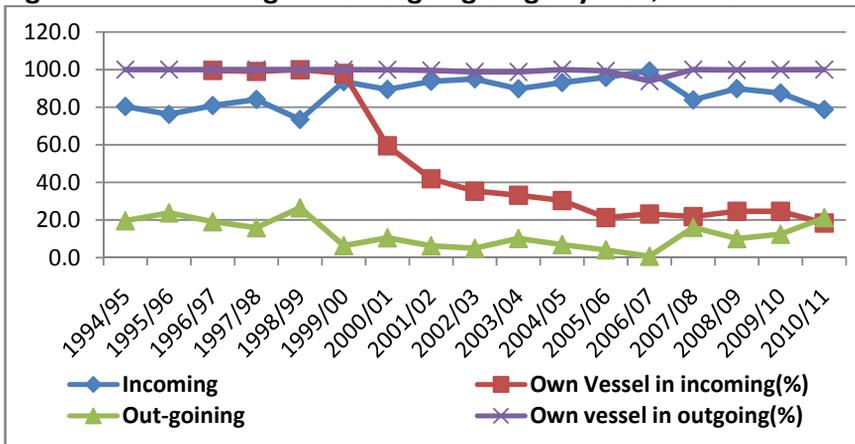
7.3.3 Water

Of the total cargo handled by ESL in the period 1994/95-2010/11, on the average, about 87.4 percent has been incoming while the balance was outgoing, indicating that the incoming cargo was more than 6 times higher than the outgoing one. In other words, the volume of exports was less than that of imports. Almost 100 percent of the outgoing cargo was handled by ESL’s own vessels, implying the sufficiency of the number and capacity of the country’s own vessels to handle outgoing cargo. While the share of own-vessels in handling incoming cargo is low and continues to decline. For instance, the share of own-vessel has declined from about 100 percent in 1998/99 to about

18.4 percent in 2010/11. This is due to the increasing volume of imports into the country (Figure 7.14).

Due to the banning of exporting unprocessed and semi-processed hides and skin, and recently cotton, which are bulky in their nature, the size of cargo export has been reduced since recently. This policy encourages export of processed and finished goods, but on the other hand, it affects the volume of cargo transported by ESL. The export/ import cargo ratio is very low and indicates that Ethiopian vessels sail empty to collect imported goods from the different parts of the globe. This in turn will have impact on the tariff imposed on import, since the ESL incurs loss on outgoing business.

Figure 7.14: Incoming and Out- going cargo by ESL, share in %



Source: ESL

ESL is currently operating with eight vessels with a combined carrier capacity of 150,000tn, and uses the Port of Djibouti as its base. The vessels were built many years ago, 1 in 1984, 3 in 1985, 1 in 1986, 1 in 1990 and only 2 as recently as 2007. This shows that, except two, the rest of the vessels are too

old to handle far-destined cargo from and to Ethiopia. This may result in stopping along routes at sea, low navigation speed, low capacity, all boiling down to low efficiency and hence competitiveness.

Dry port facilities transported 44 percent of shipments of the country's total import and export goods in the 2010/11. This is 56 percent less compared with the preceding fiscal year.

The Shipping wing of the Ethiopian Shipping and Logistics Enterprise provides Coastal and International Marine and Internal Water Transport services from/to Djibouti Port, through over 40 ports across the globe in the Gulf area and around the Indian Sub Continent, China, Korea, Japan, Singapore, South Africa and Indonesia.

The Sector has also started rendering Multimodal Transport Service/Inland Transport Service/ by transporting the cargo under a single contract, but performed with at least two different means of transport from its origin to its destination. This enables the customers to receive their cargo without any inconvenience⁴².

The purchase of vessel takes place occasionally. In 2007, Ethiopia bought two vessels in. As part of its fleet renewal, ESLSE made out a contract for nine new ships with the Chinese. The order is for seven 28,000-ton heavy lift, multipurpose vessels and two 41,500-ton tankers. The multipurpose ships were to be delivered in August 2012 and the last unit of the series is due in February 2014. The new units will replace six cargo ships between 15,000 and 8,000 tons, built between 1984 and 1990.⁴³

⁴² <http://www.ethiopiashippinglines.com.et/VesselProfile.htm> accessed 27 April 2012

⁴³ Turkey, SEA NEWS, [http://www.seanews.com.tr/article/SHIPBUILDING/50245/Ethiopian-Shipping-Lines/retrieved on April 27,2012](http://www.seanews.com.tr/article/SHIPBUILDING/50245/Ethiopian-Shipping-Lines/retrieved%20on%20April%2027%202012).

The volume of total cargo handled by dry ports through multimodal transport system has been increasing since its establishment in 2008/09. The number of containers, general cargo in tons, number of RORO and number of empty containers (TEU) handled by dry ports in 2010/11 has reached 10, 886, 1105, 526 and 7234, respectively (Table 7.8).

Table 7.8: Service Delivered (Cargo Handled) on Dry Ports

No.	Cargo Handled on Dry Ports		2008/09	2009/10	2010/11
1	Number of Containers (TEU)	By Multi Modal Transport System	48	8,152	8,638
		By Unimodal Transport System	1,007	4,185	2,248
		Total	1,055	12,337	10,886
2	General Cargo in Ton		-	1,219	1,105
3	Number of RORO*		-	470	526
4	Number of Empty Containers (TEU)		-	6,265	7,234

Source: Dry Port Service Enterprise (DPSE)

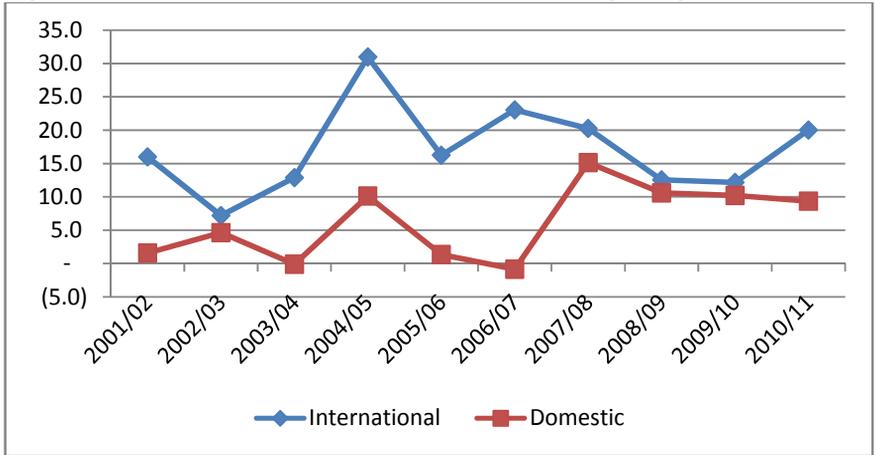
* It refers to Roll on-Roll Out (usually quoted for Vehicles)

7.3.4 Air

a) Passengers and Cargo carried by EAL

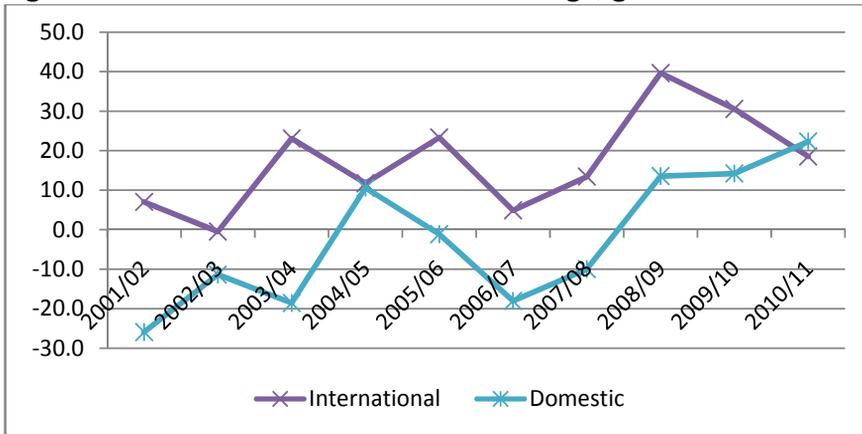
The number of international passengers carried by Ethiopian airlines has increased from 798.7 thousand in 2001/02 to 3262.8 thousand in 2010/11, increasing on the average by 17.1 percent over the survey period. The number of domestic passengers has increased from 263.8 thousand in 2001/02 to 468.5 thousand in 2010/11, indicating an average annual growth of 6.2 percent in the same period. The registered achievement is remarkable in the face of declining performances of international carriers across the world (Figure 7.15).

Figure 7.15: International and Domestic Passengers, growth in %



Source: EAL

The volume of cargo carried by international flights has increased from 3.2 million kg in 2001/02 to 168.2 million kg in 2010/11, pointing to an average annual growth of 17.2 percent over the period. The size of cargo carried by domestic flights has declined from 753.7 thousand kg in 2001/02 to 695.9 thousand kg in 2010/11, indicating an average annual decrease of 2.4 percent in the same period. The increase in cargo in international flights is due to increased export in cut flower and meat and meat products, while the decrease in domestic cargo transport could be due to the increased role of private aircrafts and channeling into road transport (Figure 7.16).

Figure 7.16: International and Domestic Cargo, growth in %

Source: EAL

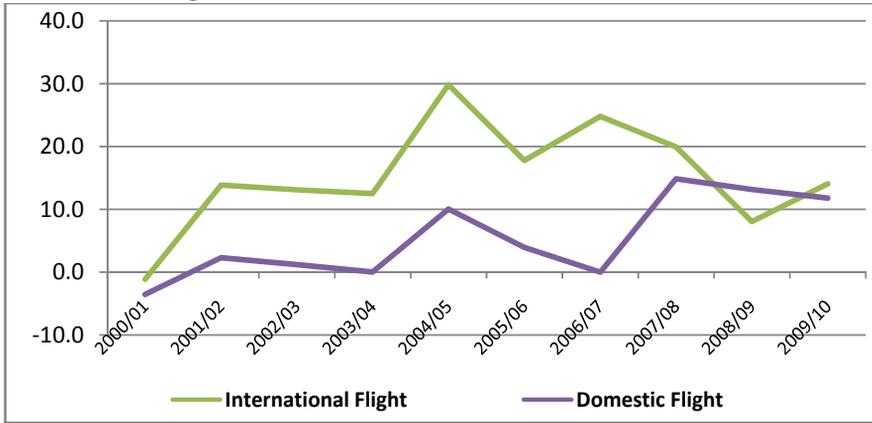
b) Revenue Generation

Ethiopian Airlines (EAL) is one of the most competent airlines in Africa. It competes with South African, Egyptian and Kenyan airlines. The growing competitiveness of the airline's service can be attributed to a number of factors.

The performance of the sector can be measured by many indicators, of which revenue is one. According to EAL, the revenue from international flights has been growing, on average, by about 14.3 percent per annum in the period 1996/97-2009/10, while the revenue from domestic flights has been growing by 5 percent per annum in the same period. The international flight component has been performing well throughout the review period, except for the years 1997/98 and 2000/01. Conversely, the domestic flight component has been doing well for a few years, especially the last three years; otherwise, the performance has not been satisfactory for the rest of the years. The high negative growth observed in the growth of revenue from domestic flights was due to the discontinuation of flights to the northern part

of Ethiopia which, in turn, is due to the 1998/99-1999/00 Ethio-Eritrean war. Overall, the growth in international flights is higher than the growth in domestic flights (Figure 7.17).

Figure 7.17: Revenue from International and Domestic Flights, growth in %



Source: EAL

The Ethiopian Airlines has expanded its international destinations significantly. It has increased from 46 in 2006/07 to 63 in 2010/11, thereby indicating a 37-percent increase in a 5-year period. However, the increase in the number of domestic flight destination was very gradual over the same period (Table 7.9).

Table 7.9: Trends in International and Domestic Flight Destinations

Indicator	Year				
	2006/07	2007/08	2008/09	2009/10	2010/11
Available Seat km (Billion) - International & Domestic Passenger	11.2	12.3	13.4	14.8	18.3
Available Tone km (Million Tones) - Freight Carried	2.1	2.4	2.7	3.2	3.9
Number of International Passenger Flight Destination	46	52	51	58	63
Number of Domestic Flight Destination	15	15	16	17	17

Source: EAL

c) Comparative Analysis of Ethiopian Airlines

The big three airlines (Ethiopian Airlines, Kenya Airways, and South African Airways) account for almost 60 percent of capacity serving the international market in Africa as of 2010. Addis Ababa, Nairobi, and Johannesburg now act as gateways to the continent for international traffic and as hubs for its distribution.

Ethiopian Airlines has been performing better both in absolute and relative terms when compared with other major African airlines. In terms of cargo transport, it has tremendously improved from third place in 2000 to second place in 2009, next to South Africa. It has surpassed the Kenyan and Egyptian airlines. This is due to transporting of cut flowers to EU markets and meat and meat product exported to the Middle East.

Table 7.10: Freight and Passengers Transported, by major Airlines in Africa

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Freight, in Million Tons										
Egypt	278	239	249	239	242	287	309	207	195	180
Ethiopia	78	79	83	93	117	133	157	160	228	424
Kenya	77	93	118	142	193	253	301	298	295	272
Nigeria	9	3	9	10	10	10	11	10	10	8
South Africa	688	756	784	891	929	923	1,233	939	761	676
Passenger in ' 000										
Egypt	4,522	4,389	4,527	4,181	4,621	4,888	4,988	5,829	6,689	6,216
Ethiopia	945	1,028	1,103	1,117	1,403	1,667	1,720	2,290	2,715	2,914
Kenya	1,555	1,418	1,600	1,678	2,005	2,424	2,685	2,857	2,881	2,949
Nigeria	507	519	520	520	540	748	1,308	1,363	1,461	1,365
South Africa	8,001	7,948	8,053	9,160	9,879	11,845	12,933	12,870	13,135	12,504

Source: World Bank Database, 2009

In terms of passengers, although it has been performing remarkably well, it still remains the fourth among the five airlines. But in terms of growth from year to year, Ethiopian has shown consistent growth over the period (Table 7.10). The reasons for South African and Egyptian in better performance are attributed to the highly developed tourism sector of the two countries. Had the tourism sector of Ethiopia developed, it could even have surpassed the two countries. As per the witnessed trend, Ethiopian will surpass Kenyan in terms of passenger transport in the near future. This has huge implication for the development of the country since it saves and also generates foreign exchange which is scarce in Ethiopia. Thus, even if Ethiopia opens the airlines sub-sector for competition the country will generate net-benefit unlike the other transport sub-sectors.

Trends in the number of Aircrafts

The EAL has been expanding its capacity in terms of aircraft number from time to time. According to EAL, the overall number of aircrafts has increased from 29 carriers of different family types in 2005/06 to 51 different types in 2010/11. This shows that the airline is growing from time to time. At the same time the airline has been replacing low- capacity aircrafts with high-capacity crafts over time. For example, in 2005/06, of the 29 aircrafts the airline owned, 11 (37.9 percent) were lower-capacity aircrafts, while in 2010/11, of the 51 aircrafts, 15 (29.4 percent) were lower-capacity aircrafts which mainly provide domestic flights. This shows that huge investment has been made on importing aircrafts into the country (Table. 7.11). Over the period 2003/04-2010/11, EAL invested about birr 17 billion for the purchase of aircrafts and cargo handling machinery and equipment.

Table 7.11: Trends in the number of Aircrafts of Ethiopian Airlines by Aircraft Family

Aircraft Family	2005/06	2006/07	2007/08	2008/09	2009/10
Boeing 737-700	5	5	5	5	5
Boeing 737-800	-	-	-	-	2
Boeing 737-200	-	1	1	1	-
Boeing 747-200F	-	-	2	2	2
Boeing 757-200P	5	7	7	8	8
Boeing 757-200F	1	2	2	2	2
Boeing 767-200	1	1	1	-	-
Boeing 767-300ER	6	7	10	10	11
Boeing B777-200LR	-	-	-	-	-
DHT	2	1	2	2	-
DH8-Q400	-	-	-	-	4
MD2-Freighter	-	-	-	1	2
Airbus A330-200	1	5	-	-	-
Fokker F50	5	1	5	5	5
ANTONOV FREIGHTER	1	1	-	-	-
McDonnell Douglas DC-8	1	1	-	-	-

Source: Ethiopian Airlines

Private Sector participation in the aviation industry

Following the introduction of free market economic management and the issuing of investment code in 1992, the sector was opened for private sectors to operate but with some restrictions on passengers' seat capacity and cargo weight. Recently, however, the restriction on cargo was lifted while that on passenger seat capacity remained in place.

The private sector consists of three operators who offer a range of personalized activities, such as charter flights, aerial surveying, medical evacuation, etc. Scheduled services are operated by EAL and there is a 20 seat limitation on anyone else wishing to offer a scheduled domestic air service. However, Ethiopia is unusual, in that, for its size it has a relatively low domestic air service capacity need. Even the recent growth in the export of flowers (a traditional air requirement) is not attracting a big demand, as most of the flower growers appear to be uncomfortable with trucking the length of distance to Bole International Airport.

Ethiopia's main tourist destinations are situated on the northern tourist circuit known as the "historic route." This encompasses the historical and cultural sites of Bahir Dar, Gondar, Axum, Mekelle and Lalibella. Since the chief mode of travel to Ethiopia for tourists is entirely by air, with the main carrier being Ethiopian Airlines (EAL), tourists want to visit these areas by air. Considered in this vein, the involvement of the private sector in the domestic transport is of paramount importance and it is in view of this that the sector is liberalized to allow the participation of private sector players.

According to the investment regime of the country, the sector is liberalized and Ethiopian nationals are allowed to get involved in the provision of Air transport services using aircrafts with a seating capacity of up to 20 passengers and any cargo size since 2002 (before the amendment in 2002

cargo size was limited to a maximum of 3,200kg). As a result, a number of investors have been licensed to provide the service. Currently, about 24 private air transport service providers have been licensed, registering over 1 billion birr capital to provide passenger, cargo and flight facilitation services, of which 17 are passenger and cargo, 1 passenger only, 5 cargo only and 1 flight facilitation services. Of these, 9 passenger and cargo and flight facilitation services have gone operational, while others are in the process of fulfilling the Ethiopian Civil Aviation Authority’s requirements (Table 7.12).

Most private air transport companies plan to provide passenger and cargo transport services, charter, ambulance, scheduled and non-scheduled flights services between Addis Ababa and regional towns. So far, there is no private airline which provides a scheduled flight service. The national flag carrier, Ethiopian Airlines, is the only airline that provides domestic flight services. Hence, the sector needs further liberalization with respect to passenger seat limitation, which is not feasible for scheduled flight, making competition with the giant Ethiopian Airlines difficult.

Table 7.12: Licensed and Operational Private Air Transport Service Projects

No	Type of Transport Service	Projects (in Number)	Initial Capital (in ‘000 Birr)	Status
		8	158514.4	In Process
1	Passenger and Cargo	9	777,594.30	Operational
	O/w Operational (%)	52.9	83.07	
2	Passenger Only	1	10,000.00	In Process
3	Cargo Only	5	59,444	In Process
4	Flight Facilitation	1	150	Operational
	Total	24	1005702.7	

Source: ECAA

7.4 Urban Transport Services: The Case of Addis Ababa

Due to secondary data paucity, this report cannot give detail analysis of the sector. However, with the aim of giving a brief picture of public transport problems in the city, three small scale surveys have were conducted from 25-30 April 2012. These include survey of daily commuters/passengers and public transport operators. The surveys' findings are given in the following paragraphs.

7.4.1 Survey of Passengers

EEA/EEPRI has conducted survey of commuters in Addis Ababa employing two types of approaches. The first is observing and registering passengers' behavior at taxi/bus stops at six different period of the day, including both rush hours and slack periods. The second is through interviewing passengers waiting for public transport at these six different periods of the day.

7.4.1.1 Observation of Commuters' behavior at bus/taxi stops

The waiting time for transport at bus terminals/taxi stop points varies from one part of the day to another. According to the survey, on average, the waiting time for buses/taxis in all the six periods of observation is 0:7.23 minutes. The waiting time for taking public transport varies between 0 (during slack period) to 50 minutes (during rush hours). At the same time, taxis focus on short distances during rush hours, thereby prolonging the waiting time for long distance passengers.

Observation was made on the manner how passengers get onto public transport providers during different times of the day. In 21 percent of the cases, pushing one another and haggling to get space on public transport buses

due to lack of sufficient number of vehicles at any one given time, particularly during rush-hours, has been observed. The pushing and haggling for space on buses has been observed to be at its highest during the morning with a 33.3 percent level of the same behavior.. This has its own adverse effects; there could be physical injuries, loss of property; the disabled, women and children could be pushed from behind by the physically strong during rush hours. This, in turn, creates delays from arriving at required destinations for the disadvantaged commuters.

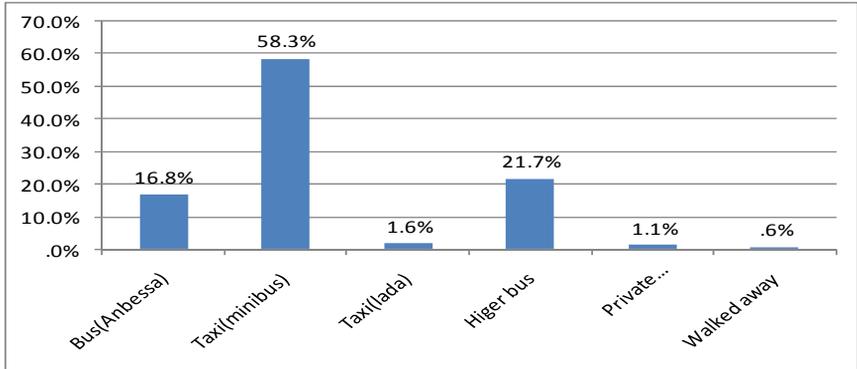
As waiting time at bust terminals get longer and longer, some passengers resort to using speedier but costly taxis. As pointed out above this usually happens during rush-hours when the day's business opens in the morning and ends toward the evening.

The width of streets plays a critical role in terms of the smooth flow of traffic in the city. A street with several lanes allows for the simultaneous flow of traffic. According to the survey, the average number of street lanes in the city is 2.5. Beside the fact that the that the available lanes are few, it has been found out that a significant number of cars are left parked in one of the lanes, leaving only 1.5 lanes for the moving cars. This creates traffic congestion and is liable to create traffic accidents. Cases of sudden braking to pick up passengers along the streets have been observed, a common cause of accidents. Hence, due attention should be given to the idea of separate parking corners along streets.

In fact, passengers class themselves as to which type of public transport to take. Of the total number of commuters observed by the enumerators, the majority (58.3 percent) takes minibuses, 21.7 percent take Higer Buses, and 16.8 percent take anbessa buses throughout the city. Some ½ percent walk

give up after waiting for some time at one terminal to look for taxis in the next bus stop, or simply decide to walk to their destinations (Figure 7.18).

Figure 7.18 : Types of Public Transport taken by Passengers



Source: EEA/EEPRI Urban Transport Survey, April 2012

Based on the ten different places selected for observing commuters at six different commuting periods of time, the heaviest level of crowdedness was observed during the business-closing hours (5:00pm-6:30pm), followed by the business opening hours in the morning. In general, the survey shows that there is a continuous flow of commuters throughout the day, but the degree differs from one period to another.

7.4.1.2 Passengers Interview

Of the 120 commuter respondents, 76.7 percent reported that they usually arrived date to their workplaces. On the average a commuter is delayed for about 53 minutes per week (212 minutes per month). The average monthly salary of the commuters is estimated at birr 2052.8. Assuming an 8-hour working day, the per-hour income of a commuter is calculated to be Birr 9.9.

Because of such delays in getting to workplaces, estimated to be about 3.5 hours per month, Birr 34.7 per month (415.8 per year) of the commuter’s income will be lost. According to AA city bus service enterprise’s report⁴⁴, about 98.3 million passengers have been served in 2010/11. Since people make round trips per day between home and workplace, the exact number of passenger will be obtained by dividing the total number of tickets by two. In addition, since we do not have know-how many passengers are served by the other public transport services; we assumed that the number would be at least the same as that for city buses. Thus, the total number of daily commuters is estimated at 269,411. According to EEA/EEPRI survey, of the total number of passengers, 75 percent take trips to workplaces. Hence, the total number of commuters to workplaces per day is estimated at 202,058.2. Therefore, the total cost to the economy due to delays (which in turn is due to transport problems) is estimated at Birr 274.1 thousand per day.

The residential and workplaces of the city dwellers are far apart. According to the survey, the distance between home and workplace of a passenger, on the average, is 10.7 km. A passenger, on the average, spends Birr 8.75 per day for transport, which is 11 percent of his/her daily income.

Table 7.13: Distance and Transport Expense

Variable	Obs	Mean	Std. Dev.	Min	Max
Home-Workplace distance	113	9.733628	6.218415	0.5	40
Transport expense per day	120	8.751667	4.65208	2	25

Source: EEA/EEPRI Urban Transport Survey, April 2012

With regard to passengers’ willingness to pay for better taxi service without waiting time at bus stops, the commuters have, on the average, indicated their

⁴⁴ Addis Ababa City Bus Service Enterprise, the 2010/11 Annual Plan Performance Report, Page 35

willingness to pay Birr 2.4, Birr 4.1 and Birr 6.9 for short, medium and long distances respectively. Compared to the existing tariff as of June 2012 for mini bus taxis in Addis Ababa of Birr 1.4, Birr 2.80 and Birr 4.80 the willingness to pay exceeds by 61.5 percent, 46.3 percent and 43.8 percent, respectively. This shows that the commuters are not satisfied with the existing taxi service in terms of both convenience and time and are willing to get better public transport services (Table 7.14).

Table 7.14: Willingness to pay for better taxi service

Distance	Obs	Mean	Std. Dev.	Min	Max
Short	116	2.421983	2.019807	1	10
Medium	117	4.095556	4.423862	1	30
Long	117	6.905983	11.46573	1	100

Source: EEA/EEPRI Urban Transport Survey, April 2012

7.4.2 Survey of Drivers

The analysis of public transport in Addis Ababa shows that a significant number of people make a living on it. At least four groups of people make their living on it: namely, the owner, the driver, the assistant (*woyyala*) and *tera askebari* [shift-regulator]. The government also collects annual revenue from the owner and the employees as well as from annual inspection fees. According to the survey, a vehicle which costs Birr 188.8 thousand fetches, on the average, a net income of birr 266.2 per day for the owner. Drivers and assistants (*woyyalas*) earn, on the average, Birr 3097.3 and 1396.8 per month, respectively. In addition public (taxi) transport pays dues to those persons who facilitate shifts at taxi starting and destination points (*tera askebari*) on average about 620.3 birr per month on the average (Table 7.15).

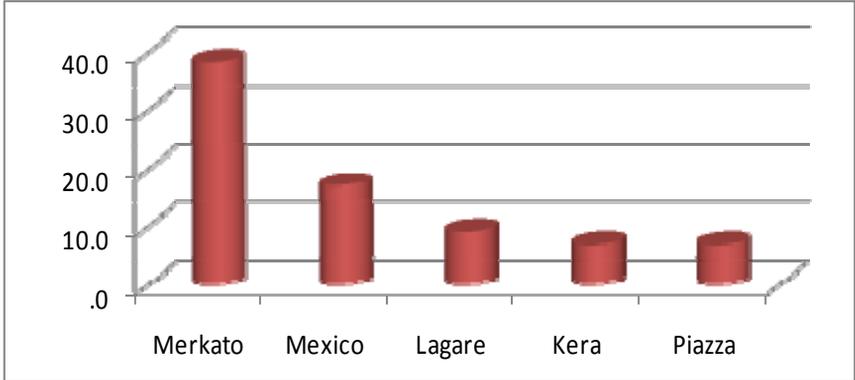
Table 7.15: Income and Expenses of public transport services in Addis Ababa

Variable	Obs	Mean
Owner's daily income	105	266.1619
Driver income	120	3097.292
Woyala income	110	1396.818
Tera askebari fees	105	620.286
Fuel expense per day	120	427.5
Servicing expense per month	120	614.7833

Source: EEA/EEPRI Urban Transport Survey, April 2012

According to the survey on drivers, the most problematic areas in the city in terms of affecting the smooth flow of traffic are *Merkato*, *Mexico*, *Legahar*, *Qera* and *Piazza* in order of their importance (Figure 7.19). The problem emanates from the narrowness of the streets, parking of cars both on the left and right of the roads, disorderly crossing of streets by pedestrians, sharing of the roads with animals and human driven carts, large numbers of vehicles relative to the capacity of roads, lack of alternative roads, and lack or absence of traffic lights. These problems, however, can be reduced significantly by prohibiting the parking of cars on both sides of narrow streets, providing parking lots, ensuring all time presence of traffic polices, expanding the roads, construction of fly over bridges, expanding pedestrian ways and constructing alternative pathways.

Figure 7.19: The Five- major crowded areas in the city



Source: EEA/EEPRI Urban Transport Survey, April 2012

According to the majority of respondents (65.8 percent), the business of public transport is not attractive compared to other businesses. Despite all that, however, as to why they still stick to it, they stated two major reasons: expectation of improvement and inability to get alternative businesses.

Recommendations

- Make the transport sector more attractive so as to increase private participation in the sector ;
- A significant problem affecting the smooth flow of traffic is parking of cars on one or another of the lanes of the streets. Hence the need to prepare proper parking lots in the different parts of the city;
- Rid main roads of animal transport and human operated carts, especially in center-city areas
- expand existing pedestrian side-streets and construct new ones.
- Prohibit parking of cars on both sides of narrow streets;
- Ensure the presence of traffic police the whole day, especially in the problematic areas of the city, focusing on preventive measures rather

than the penalization of offenders, since the total fee collected from penalties is far lower than the cost incurred due to congestion and accidents in terms of loss of property and injury to human life. The presence of traffic police is critical, since only in their presence most drivers seem to behave properly although that shouldn't be the case.

- Constructing overpasses at some problematic square, like Mexico Square could alleviate the problem significantly;
- Construction of alternative pathways in some areas would alleviate the problem of the particular localities. This could be done through upgrading local or linking roads, or building overpasses.

Chapter Eight

Review of Transport Policies, Strategies, Programs and Regulatory Framework

8.1 Policies⁴⁵, Strategies and Programs

Policy is a set of principles that guide decision-making or the processes of problem resolution. Transport policy is the development of a set of constructs and propositions that are established to achieve particular objectives relating to social, economic and environmental development, and the functioning and performance of the transport system.

Transport policy can be concomitantly a public and private endeavor, but governments are often the most involved in the policy process since they either own or manage many components of the transport system. Governments also often perceive that it is their role to manage transport systems for it is important public service they provide in addition to impose a regulatory framework. Besides, the private sector has much leverage into the policy process through its asset allocation decisions, which reflects in new public transport policy paradigms.

Public policy is the means by which governments attempt to reconcile the social, political, economic and environmental goals and aspirations of society with reality. These goals and aspirations change as the society evolves, and thus a feature of policy is its changing form and character. Policy has to be dynamic and evolutionary.

⁴⁵ The policy review literature draws on the work of Jean-Paul Rodrigue, Claude Comotios and Brian Slack (2009), *The Geography of Transport System*, second edition, New York.

Transport is taken by governments of all types, from those that are interventionist to the most liberal, as a vital factor in economic development. Transport is seen as a key mechanism in promoting, developing and shaping the national economy. Many regional development programs are transport-based. Governments also seek to promote transportation infrastructure and services where private capital investment or services may not be forthcoming. Paradoxically, academics question the directness of the links between transport and economic development. Transport frequently is an issue in national security. Policies are developed to establish sovereignty or to ensure control over national space and borders. Transport raises many questions about public safety and the environment. Issues of public safety have for a long time led to the development of policies requiring driving licenses, limiting the hours of work of drivers, imposing equipment standards, establishing speed limits, mandating highway codes, seat belts and other accident controls. More recently, environmental standards and control measures are being instituted, in response to the growing awareness of the environmental impacts of transport. Transport policy has been developed to prevent or control the inherent monopolistic tendency of many transport modes.

Governments have a large number of instruments at their disposal to carry out transport policy. An extremely important instrument is public ownership. The direct control by the state of transportation is very widespread. Most common is the provision by public agencies of transport infrastructure such as roads, ports, airports, canals. Public ownership also extends to include the operation of transport modes. In many countries airlines, railways, ferries and urban transit are owned and operated by public agencies.

Subsidies represent an important instrument used to pursue policy goals. Many transport modes and services are capital intensive, and thus policies seeking to promote services or infrastructure that the private sector are

unwilling or unable to provide may be made commercially viable with the aid of subsidies. Indirect subsidies were offered to the air carriers of many countries in the early years of commercial aviation through the awarding of mail contracts. Dredging of ship channels and the provision of other marine services such as pilotage and navigation aids are subsidies to facilitate shipping. Both public ownership and subsidies represent instruments that require the financial involvement of governments. Revenue generation is becoming an increasingly important instrument in transport policy.

Regulatory control represents a means of influencing the shape of transportation that is very widely employed. By setting up public agencies to oversee particular sections of the transport industry, governments can influence the entire character and performance of the industry. The agencies may exert control on entry and exit, controlling which firms can offer transportation services, at what prices, to which markets. Thus while the actual services may be offered by private firms, the regulator in fact plays a determining role. Other policy instruments are less direct, although in many cases can be as equally important as the three discussed above. Many governments are major promoters of research and development in transportation. Government research laboratories are direct products of state investments in R&D, and much university and industry R&D is sustained by government contracts and programs. The fruits of this research are extremely important to the industry.

Labor regulations pertaining to conditions of employment, training, and certification may not be directed purposefully at influencing transport, but as a policy they may exert a significant effects over the industry. Safety and operating standards, such as speed limits, may have a similar effect. The restrictions on limiting the number of hours a truck driver may work may be

instituted for safety reasons and for enhancing the working conditions of drivers, but they shape the economics of truck transport.

Public policies reflect the interests of decision makers and their approaches to solving transport problems. These interests and approaches are both place specific (they apply to a particular area of jurisdiction) and time specific (they are established to reflect the conditions of transport and the intended solutions at a point in time). Policies change and evolve, therefore, as the conditions change and as the different sets of problems are recognized. Policies are dynamic. The dynamic nature of policy is reflected in the way the policy instruments have been employed over the years. In the Nineteenth Century, when many of the modern transport systems were being developed, the prevailing political economy was one of *laissez-faire*, in which it was believed that the private sector should be the provider of transport services and infrastructure.

This situation was not completely without public policy involvement, however. The massive subsidies that were granted to US and Canadian railroads are an example of state intervention. In the early 20th the overprovision of rail lines, competition between carriers and market failures led to a crisis in many parts of the transport industry, particularly after 1918. This led to a growing degree of government involvement in the transport industry, both to offset market failures, jurisdictional conflicts and to ensure that services could be maintained for the sake of the "public good":

Many segments of the private transport sector were eventually captured by the government. In addition to the public ownership of transport modes, there emerged in the 20th century a growing amount of regulatory control. The airline and the trucking industries saw entry limited by permits, and routes and rates were fixed by regulatory boards that had been set up to

control the industries. At the same time greater safety regulations were being imposed and working conditions were increasingly being shaped by labor legislation. By the 1960s therefore, transportation had become under the sway of public policy initiatives that exerted an enormous influence on the industries and their spatial structures. By the 1960s, however, there was a growing body of evidence that indicated that public ownerships and regulation were not always in the public interest. Transportation costs that were fixed by the regulatory authorities were maintained at higher levels than were necessary. Research demonstrated that many regulatory boards had been "captured" by those they were supposedly regulating, so that they were frequently acting to protect the industries rather than the public. At the same time there was a crisis of public finances in many countries, where the costs of operating the state owned transportation industry were seen to be unsustainable. Although President Carter had initiated the first steps towards deregulation in the US in the mid-1970s, it was in the 1980s during the Reagan presidency that trucking, the airline industry, and the railways were largely deregulated. In the UK, in addition there has been a massive move to privatize most sectors of the transport industry, including state and most municipally-owned bus companies, the national airline, trucking, the railway, airports and most seaports.

Deregulation and privatization policies have spread, unequally, to many other parts of the world. New Zealand has perhaps the most open transport policy, but many others, such as Canada and Australia have made significant steps in this direction. At the beginning of the 21st Century, transportation is under less direct government economic control worldwide than at any period over the last 100 years.

The recent trends in transport policy towards liberalization and privatization have not necessarily weakened government interventions. Controls over

monopoly power are still in place, and even in the most liberal economies there is still strong evidence of public policy intervention even in such capitalist countries as the US.

These-days governments are beginning to exert greater control over environmental and security concerns, issues that are replacing former preoccupations with economic matters. All transportation projects are subject to extensive environmental assessments that may lead to a rejection of proposals, despite strong economic justification. As a major source of atmospheric pollution and environmental degradation, the transportation industry can anticipate many further government environmental policy interventions. It is the area of security that the most recent set of policy initiatives have been drawn.

8.2 The Role of Government in the Sector

8.2.1 Pre-1991

During the imperial regime, there have been attempts to rehabilitate and expand the transport infrastructure in the country. To this end, significant resources were allocated for the development of transportation during the three five-year development plans (1957-74).

In Ethiopia, tariffs were administratively set for the first time in 1960 for passenger carriers alone. Freight transport rates were at that time generally set through the open market upon agreements between the providers and the users of the service. Freight rates at that time were subject to violent fluctuations, and at times resulted in the concentration of the service on certain routes. In 1968, the government issued a tariff rule for freight vehicles, determining minimum and maximum rate, which, however, could not be implemented.

In 1975, following the shift in ideology, the government assumed control of all transportation and communication facilities. The military government continued to expand and improve the transportation infrastructure by using its own funds and by securing loans from international organizations such as the World Bank. During this regime, the sector was almost controlled by the government. Large capacity freight and passenger transport services are owned and run by the government living limited role for private sector. Transport tariff was set by the government and vehicles were assigned route to service.

In 1976, tariff was set administratively, which subjected freight transport vehicles to strict government control, and as of that date, dispatching these vehicles was made solely through Regional Transport Offices.

The existing freight transport tariff goes back to 1980, and its fairness has been seriously questioned. The economic analysis of the adequacy of fares carried out in 1985 under road transport study concluded that fares were not sufficient to cover costs, except under the most favorable road condition, and that they did not permit enough capital recovery (WB, 1988:7). Even then the fixed tariffs failed to cover the continually soaring purchase price of vehicles and their operation to the effect that the situation in the road transport sector deteriorated alarmingly. In fact both the government-run National Road Transport Corporation (NATRACO) and private transport agencies could hardly replace vehicles and remain in the sector, let alone expand their services.

8.2.2 Post- 1991

After the coming to power of EPRDF-led government, it adopted a number of economic reforms oriented towards stabilization and structural adjustment

measures such as liberalization, devaluation, subsidy removals and other market-oriented measures to help the country transit from the command economic system. Of this the deregulation of the transport sector is one. As a result, private sector started to participate in the sector.

To guide the development of the economy, government has prepared development strategies dubbed agriculture development led industrialization (ADLI). ADLI recognizes the need to expand rural infrastructure, especially roads so that smallholder farmers might get access to both output and input markets and other services and enhance their productivity and incomes.

So as to implement ADLI a number of medium-term plans have been prepared and put to effect. These include SDPRP, PASDEP, and currently GTP. Here attempt is made to examine the role transport sector is given in each development plans.

Reviews show that Ethiopia has not yet issued any transport policy to guide the overall development of the sector. Ethiopia's transport policy, which includes all modes of transport, is in its early stage of design during Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and draft level during Growth and Transformation Plan (GTP).

In Sustainable Development and Poverty Reduction Program (SDPRP), the focus was on road infrastructure development, with no attention given to the service side of transport and also other modes of transport such as air, rail and water.

PASDEP's focus with regard to transport was to create adequate capacity in the road transport sub-sector to facilitate and hasten the economic recovery process and restore the essential road networks to an acceptable condition.

The Program covered measures aimed at: (i) creating a conducive atmosphere in the road sector through introducing a series of policy and institutional reforms; and (ii) rehabilitating critical roads that have been identified as major impediments to the attainment of the objectives of the Economic Recovery Program. In this regard, the rehabilitation of trunk roads and the upgrading of some link roads have been accorded high priority. During the plan period, development in infrastructure and services of the other modes of transport was not given due attention. The focus was on network expansion, particularly the upgrading and construction of link roads to specifically address the deficiencies in access to potentially rich agricultural areas and mobility in rural areas as part of a broad-based rural development strategy.

ERTTP, a key part of the PASDEP, is an approach that focuses on reducing the travel and transport burden of the rural population by laying down road infrastructure, providing social and economic facilities and enabling the people to utilize the road infrastructure effectively. The ERTTP is therefore an integrated rural development initiative that revolves around rural travel and transport, and it envisages the following activities: construction of low level rural roads, provision and expansion of a conventional and intermediate means of transport, and expansion and optimization of facilities and schemes that raise the rural household income level. In terms of financing of ERTTP, the plan is to get 40% from the community in the form of labour and 60% from ERTTP/RADA (Rural Access Development Authority funding).

GTP gives greater emphasis to the transport sector compared to the previous medium-term programs. One of the pillar strategies of the GTP is enhancing the expansion and quality of infrastructure development. GTP has incorporated both infrastructure and service components as well as institutional and management arrangements of all modes of transport.

As with the previous two programs, road infrastructure has been given top priority. Road infrastructure development includes: first, improving and expanding the existing road infrastructure; second, capacity building for road transport agencies so that these agencies will provide effective management and leadership, as well as technical support for contractors and consultants; third, enhancing the construction of the main routes, those expected to facilitate the fastest-growing of the socio-economic development sectors of the country, based on existing policy and strategy; and fourth, accomplishing rural community road development.

Road Transport: by the end of GTP, all rural *kebeles* will have access to all the main roads of the country. According to the plan, the country will have 64,522 km length of main roads in 2014/15, a substantial increase on the 48,800 km in 2009/10, and travel time to the main roads will decline from 3.7 hours in 2009/10 to 1.4 hours in 2015/15. The percentage of rural residents farther away from the main roads with an average of 5km will be reduced from 64% in 2009/10 to 29%.

Rail transport: In GTP, rail transport development has got greater focus. During the GTP period, 2,395 km of rail way lines will be constructed in five corridors. In Addis Ababa, LRT (Light Rail Transit) with a total of 34 km will be constructed.

In addition to the infrastructure, the service aspects of the sector have been given due attention. In this regard, road transport, maritime, transit and air transport services have been earmarked. During GTP period, the road transport service will be equipped with speed, multi-modal cargo service provisions. Structurally, the transport institutions will be reorganized, and the services are expected to cover large areas, down to the rural *kebele* level.

Addis Ababa, Dire Dawa and major cities of the regions are expected to have modern and efficient transport modes based on modern land-use planning. Traffic safety with traffic engineering technology is expected to be used. The plan envisages the introduction of modern freight transport vehicles and logistics system. To this end, four main freight terminals will be established at the main gates of Addis Ababa.

At least 22 transport vehicles technical fitness inspection and training centers (traffic complex) have been planned to be constructed.

With respect to the marine transport sub-sector, the development of multi-modal transport system and of dry ports has been given top priority. The freight transport service will be supported by modern technology of logistics system to guarantee the safety of cargoes on the way to and from ports.

Inland water transport has got consideration. To this end, lakes and rivers will be rehabilitated to make them navigable and enhance the economic development of the areas.

Air transport Service: GTP focuses on expanding its routes and destinations both internationally and locally. It provides standardized cargo aircrafts, terminals and cooling systems. The quality and capacity of airports will be improved. Pilots and technicians will be equipped with modern technologies to attain the necessary safety and security standards.

The Ethiopian Aviation Authority will develop especial aviation capacity building programs and implement them simultaneously. New aircrafts will be purchased or leased; and local flights will be equipped with safety enhancing facilities.

In general, GTP has envisioned various strategies and targets for the development of both the infrastructure and service components of the transport sector compared with the preceding programs.

Although Ethiopia does not have national transport policy yet, it has a number of sector development strategies by sub-sector level. The emphasis of the transport strategy study was on developing strategic options to promote an integrated inter-modal national transport system based on comparative economic advantages, national economic priorities and the growth and poverty reduction strategies pursued by the country.

The National Transport Sector Strategy (NTSS)⁴⁶ aims to develop the transport system in such a way that the national development goals can be attained. It is based on an estimate of the future transport needs derived from identified key drivers of development and stated national policy objectives, as well as an in-depth analysis of the present situation.

The most critical issue, according to NTSS, is addressing the priorities, which include the following:

- The need to shift the emphasis on road development to rural feeder (community) road and construction and rural–urban transport linkages, while continuing the RSDP program and completing and upgrading the national network;
- The need to improve road safety through training, better road designs, clear and up-to-date traffic regulations, effective enforcement, and rapid rescue services;
- The need for improved skills and management in the transport sector, and the adaptation and strengthening of institutions, to enable objectives to be reached;

⁴⁶ COWI and GOPA, The National Transport Master Plan(NTMP) study, September 2007

- Related to this, the need to continue the modernization of government of the sector, to contribute to success in the national movement to decentralization and participation. This is partly a matter of culture change;
- The need to scale up, to meet the MDGs and to ensure that transport bottlenecks are minimized during the expected prolonged period of high growth;
- The need for an enabling strategy, to release the potentials of the private sector. Steps to increase the contribution that private sector investment can make to release public funds for complementary infrastructure or other investments need to be taken;
- The need for increase in passenger transport, commensurate with population growth – both within urban centers and between them. Efficient urban and inter-urban transport is essential;
- The focus on developing small towns/*kebeles* as ‘growth poles’, local service centres and market places, which will increase the need for improved accessibility from the villages to the local centres, and for links between the *kebele* centres (growth poles) and the larger urban centers and main transport networks;
- A rapid development of industrial and agricultural production as well as exploitation of national resources and tourism potential will require expansion of good quality land and air transport networks throughout the country;
- Finally, the existing globalization will provide more opportunities for increased international trade, including high-value goods, such as perishable products. The development of international transport corridors and efficient national entry points for road, rail, air and sea-based transport is vital. International transport links can also help create regional markets, and are an important component in the development strategy of Africa as a whole.

The main constraints that need to be overcome in the transport sector to be able to meet the challenges ahead include the following:

- Access to funding for investment in the needed infrastructure. In fact, increasing the absorptive capacity of the investment agencies is also essential, or it will be impossible to sensibly spend additional funds. This requires strengthening human resources through continuous skills development and scaling up of the institutions;
- More professional commercial companies are needed. Training and skills development are essential. One important constraint on the private sector is lack of access to financing sources for investment, or re-investment, in movable equipment, such as vehicles. The financial markets are not yet ready to manage this problem. Government limitations on imports also play a part, and vehicle ownership remains in the hands of a multitude of small investors and endowment funds are linked with the regional states;
- The expansion of the Ethiopian transport sector to deal with increased volumes of international transport requires both capital and knowledge. Existing barriers to the investment by non-nationals in domestic transport need to be progressively removed to allow international transport companies greater possibilities to operate in Ethiopia and contribute to its development.

Transport sector development priorities as indicated in the NTSS include the following:

- (1) Rapid expansion of links to the rural areas (the *woredas* and *kebeles* in the first instance), to enable the rural populations to diversify their incomes by participating in the market economy;

- (2) Efficiency measures and continued road and rail network development to complete and upgrade the national network, reduce freight transport costs, enhance national competitiveness, improve safety, and give greater opportunities for mobility and development of natural resources and industry;
- (3) Development of the air transport sector, to make use of its potential in reducing the time and cost of transport and in earning foreign currency;
- (4) Reduction in shipping costs through the development of dry ports and multi-modal transport systems to facilitate transits and retain as much as possible of the value added from port activities within the national economy. There is also a need to diversify shipping routes and review the status and financing of ESL to ensure that the benefits of competition in shipping can be obtained. Opening up new roads to borders and facilitating international road transport have an important role to play in the diversification of shipping routes.

To improve the economic, social, political and environmental situation of the country, the NTSS has suggested two major tasks that need to be accomplished: providing opportunities for development and reducing transport costs.

The NTSS comprises the National Network Development Strategy. The national network development strategy considers the main transport arteries of the country that link the regional states and main cities with each other and with Addis Ababa.

The Road Network Development Strategy:

The main strategic issues are: reaching the un-served woredas, sealing or paving of well-used roads; improving safety in road designs; clear responsibilities for all levels of the road network; development of the contracting industry and strengthening international links to bolster regional trade and development.

Road Maintenance Strategy:

The principal road maintenance issues that need to be addressed for the strategy are: The Road Fund is not truly independent of MoFED. It depends on the grant of the value-added tax on fuel; the maintenance standard is too low and covers too few roads; Effectiveness of management systems is low, and management of contractors is too lenient; Labour intensity in maintenance tasks can be increased.

Civil Aviation Development Strategy:

The key issues that need to be addressed are: The provision of a network of domestic airports to ensure national coverage and to include cargo facilities where justified; The need to liberalize the system to ensure the expansion of domestic services; The match between economical aircraft types and the types that each domestic airport can handle; The provision of air navigation equipment at the domestic airports to improve reliability and safety; Capacity-building within the Airport Enterprise and the CAA, to ensure that existing strengths are retained and weaknesses overcome; Facilitate the expansion of domestic and international services by seeking the widespread adoption of the Yamoussoukro Declaration for liberalization of air services within Africa, while upgrading key domestic airports to international status.

Railway Development Strategy:

The key interventions include rehabilitation and upgrading of existing railway, concession of existing railway, further network development and railway organization.

Local network connection to all parts of the country and international network expansion with the neighboring countries of Sudan, South Sudan, and Djibouti has also been considered in the strategy. The network is assumed to be connected to bulk transport lines of oil, containers, and mining in the country and from neighboring countries.

Until recently, Ethiopia had no national railway company, as CDE is jointly owned with Djibouti. A new organization has been proposed in the strategy and the National transport master plan. Currently, a new organization has been established and is working hard on the expansion of railways in the country.

Waterways and Pipelines:

Since the country is landlocked, the marine transport issue is limited only to the services of vessels operating along international routes. The strategy has considered the ways in which inland waters resources can be upgraded and utilized at regional transport bureaus. The strategy has failed to consider the role of the artificial lakes created from time to time in supporting local community mobilization, and for recreation and tourist attraction purposes. The artificial lakes created in the process of constructing the Gibe and Tekeze dams, and the lakes that are going to be created in the process of building the Renaissance Dam have not been mentioned.

The strategy has made little mention of pipeline transport. It requires further consideration to undertake survey and inventory to know the magnitude of

pipeline transport and come up with appropriate strategy to develop the system throughout the country.

The NTSS has dealt with the road transport network in greater detail than it did with any other transport modes. The strategy needs to consider the service provision of all sub-modes of the transport system. The road transport service provision and safety issues should have been emphasized even more. Institutional management of modern systems of transport, with the view to capacity-building, in terms of skilled human resources and technological advancement, should have been given further consideration.

Rural Transport: The strategy has stressed the importance of woreda roads. Every woreda, even all the way down to every kebele, needs to be provided with roads that can accommodate, at a minimum, medium-sized, two-axle trucks and medium-sized buses. Community (village level) roads will have no meaning if the network down to kebele level is not in place.

The strategy has also indicated that the rural road access program would be implemented in two phases. The program proposed for RADA will operate at two levels: first, roads opening access to and from communities that will generally be of public interest (to be financed with public funds) and, second, access to infrastructure within the communities that will be financed substantially by the communities themselves, either directly in cash, or through self-help programs.

The investment program will last for over 20 years, the construction of some 100,000 km of roads providing access between *kebele* and *woreda* centers and some 30,000 km of other rural transport infrastructure within the villages and *kebeles*.

The program proposes to undertake fine-tuning of *kebele* centers with infrastructure centers within local community areas. One rural *kebele* will gradually serve as a center for all other infrastructure services and access points to local rural communities. Within this package, *kebele-to-woreda* and *kebele-to-village* connection will take place as components of the program.

The work will be performed using a labor-intensive approach, involving local communities, with the view to training, and improving the capacity of, small contractors.

Urban transport: the strategy has also assessed the importance of public transport for the country's major cities; mainly, Addis Ababa, Dire Dawa, Bahir Dar, Mekelle, Adama, Hawassa and others of a similar status. For Addis Ababa, buses with priority lane rights and LRT (light rail transit) public transport are recommended. In most of our urban centers, pedestrian sidewalks are lacking, or misused, or destroyed because of lack of maintenance. So the attention to upgrading and expanding standardized transport systems is crucial for urban mobility. In our cities, urban land use plans are in a problem, the plans are not adhered to.

In all urban transport sector strategies, the *traffic safety problem* has been cited as a critical problem and one of the obstacles/challenges that should be tackled in the future through its integration with all other packages in a comprehensive manner.

Strategy for Transport Efficiency

The main strategic issues are to improve the efficiency with which transport services of the country operate.

Road Transport

Regarding the efficiency of the country's transport modes, the road transport mode is mainly characterized by old vehicles, limited fleets and imported fuel dependency. Most vehicles are imported second-hand. The average duration of the fleet is 19–20 years and about one-third of the fleet is more than 25 years old. The strategy document has also indicated that import restriction on very old and outdated used cars might limit the fleet size, but it is nonetheless important in terms of minimizing pollution and other related problems. Inter-urban public transport in general can be taken as private operation. Except for very few Walya public transport operators, almost all operators fall into the private-associations category, or companies, or simply operate individually. The strategy document has also considered the issue of further privatization.

Regarding the efficiency of the road transport sector, the problems and constraints of the mode include: Lack of motorized transport; Poor vehicle-productivity; Safety; Air pollution; and Reliability of sustained fuel supply.

The document has indicated directions for facilitating environment-friendly public transport in Addis Ababa and other major cities and intermediate transport means for rural and semi-urban areas of the country. This will reduce all the weakness the sector is burdened with—from shortage of vehicles, to poor productivity and safety problem.

The strategy has also considered the possibility of electrification of the transport mode as well as the use of environment-friendly fuel.

To improve the development level of the road transport sub-sector, the question of safety in particular should get a much closer attention. Traffic police forces and rescue departments should be further strengthened. The

National Traffic Safety Council should be strengthened so that traffic policy, regulations and their enforcement will be further enhanced.

Commercial transport operators are registered in the same way as those in other businesses, with no specific extra requirement for those involved in the transport business. a system of operators' licensing is proposed, coupled with the introduction of certification in professional competence (CPCs) for truck and bus transport operators.

The document has further indicated that there should be a simultaneous updating of the laws, and the ratification of international agreements on road transport, the transport of dangerous goods, etc., for safety reasons and to ensure that Ethiopia plays its full part in the development of transport in the wider East African region.

The strategy should have further focused on institutional and organizational efficiency. The sector has no higher institutions that can produce skilled human resources and exercising the best practices as lessons learned from the experiences of the rest of the world.

Aviation

The proposed strategy has also considered the need for improvement in, and enhancement of, the following areas, with the view to providing efficient transport services: allowing for private competition in the domestic market along with price flexibility; improvement of airports and attendant facilities; and capacity-building in the civil aviation sector.

Urban Transport

Efficiency in urban transport has two dimensions: one, efficiency in the use of the road and infrastructure network and efficiency of the passenger transport operators. In both cases, the situation of Addis Ababa is the most critical.

Consequently, the gradual introduction of LRT (light rail transport) system, such as trolley buses (trams) and modern street cars and trains will facilitate fast and efficient mobility of the growing transport demand of the city. Gradual withdrawal of the present mini buses from Addis Ababa to the other secondary cities of the country is required.

Programs⁴⁷

A number of programs have been designed and implemented in the transport sector in the last decade and so. Among the notable programs, the three road sector development programs are the major ones to mention.

The First RSDP

Road Sector Development Program (RSDP) commenced in 1997. The objective of RSDP I was to restore the road network to acceptable condition, targets were established for the first phase of the program, RSDP I. Specifically these were to increase the road density from 0.43 to 0.49 km per 1,000 population and from 21 to 27 km per 1,000 km² and to improve the proportion of road network in good condition from 22 to 35%.

⁴⁷ This section draws totally on the Federal Democratic Republic of Ethiopia Ministry of Transport and Ethiopian Roads Authority, RSDP 13 Years Performance and Phase IV, **January** 2011, Addis Ababa.

The Second RSDP

Building on RSDP I, the physical targets for RSDP II were set to increase the proportion of roads in good condition to 45 percent by June 2007 and through selective construction of new roads, including non-trunk roads, increase the density of the road network to 34 km per 1,000 km² and 0.50 km per 1000 population. An important additional target was the implementation of regular maintenance activities on much of the road network by 2007.

The Third RSDP

Launched in July 2007, the objectives of the RSDP III were to continue the restoration and expansion of Ethiopia's road network. Alongside the program of physical works, RSDP III captured initiatives to assist with the development of stronger road network management and technical capacity. This included strengthening the role and capacity of the domestic construction industry. RSDP III also addressed a number of social objectives including road safety, environmental protection, and HIV/AIDS prevention and mitigation.

The RSDP III program targets included the following:

- Reduce the inhabited land area further than 5 km from a road to 63 percent by the end of 2009/10;
- Increase the road density to 45.7 km per 1000 km² and 0.59 km per 1000 people by the end of 2009/10;
- Reduce the average distance from a road to 11 km by the end of 2009/10;
- Increase the rate of acceptable (good + fair) roads to 82% for all road types by the end of 2009/10.

The RSDP III comprised the following interventions:

A) Federal Roads:

- A civil works program including rehabilitation of 353 km of trunk roads, upgrading of 3,515 km of both trunk and link roads and construction of 1,980 km of new roads, including improvement of bridges and structures; and
- A road maintenance program comprising periodic maintenance on 3,108 km of roads and routine maintenance on all types of roads.

B) Regional Roads:

- A civil works program targeting construction of 5,730 km of rural roads, periodic maintenance on 403 km of rural roads and routine maintenance on all types of roads; and
- Construction of 30,364 km of community roads.

Institutional support was provided across the Federal and Regional/Rural Roads Authorities, the Road Fund Administration and the Domestic Construction Industry through various training programs and initiatives. A wide range of studies and technical assistance programs were also undertaken or commissioned to assist execution of the program.

The Forth RSDP

The Road Sector Development Program (RSDP-IV) is closely aligned to the objectives of GTP. The roads subsector has targets for the improvement and expansion of the country's road network and these targets have been influenced by the needs assessment of the required road infrastructure with respect to the Millennium Development Goals.

In response to the need, and as part of the RSDP-IV, government is embarking on a Universal Rural Road Access Program (URRAP) that sets out to connect all Kebele by roads of a standard that provides all-weather, year round access, meets the needs of the rural communities, are affordable and maintainable.

8.3 Liberalization of Transport Sector

Since the coming to power of the EPRDF a number of economic reform programs have been implemented, of which the deregulation of the transport sector is one. As a result of the reform measures, the private sector has started playing significant role in the development of the sector.

The government has been playing a leading role in infrastructure development in such areas as construction of roads, railways, air ports and dry ports, and that is as it should be since the private sector is still too weak to do the job by itself.

The private sector's capacity-building program in construction and consultancy has been intensive since the last several years. Professional engineers were given small projects with advance payments to procure some materials and equipments. Small contractors have been encouraged through considerable support from the government.

To develop the private sector engineers, surveyors and the like are invited to organize themselves in order to be involved in ERTTP program implementation by undertaking the construction of rural *kebele* road and connection accesses to *woredas*.

With regard to transport services, however, the government is still involved in the provision of transport services side by side with the private sector. It has been involved in all international air flight services plus a bulk of local air

services, shipping, all rail transport, and some road transport services. In road transport, services, the government is involved in dry/liquid cargo transport enterprises (Comet, Shebele, Bekelcha, Weyra transport enterprises) and in public passenger services (Walya inter urban and Anbessa city buses).

Some of the activities that have been undertaken by government have been outsourced to private companies. Among which, the task of training drivers and conducting vehicle inspection are the major ones to mention.

In the air transport subsector, cargo service is made fully free for private operators to involve in, whereas the passenger service is limited to a maximum of 20 seats. Within this limited passenger seat arrangement, about 21 private companies were registered and licensed, but only very few of them went operational.

Of the other issue related to transport sector is opening up the sector to international competition. The issue has been high on the agendas of a number of countries at GATS. In the move towards liberalization of the transport sector, Ethiopia has conducted impact assessment study⁴⁸. The study showed that opening up of the transport sector will improve consumers' welfare and has positive effect on GDP growth.

However, before taking steps towards liberalizing the sector, the country has to prioritize the sub-sectors based on the sector's link to the overall economy and the poor—the poor as producers, consumers and employees, and their ability to take advantage of the benefits to be gained from liberalization.

⁴⁸ Ministry of Trade and Industry, Impact of WTO Accession on the Transport Service Sector of Ethiopia, Draft Final Report, March 25, 2009. Addis Ababa, Ethiopia.

Positive overall impact assessment result does not mean that opening up each transport sub-sector has a net positive benefit. Hence, the country has to identify the sub-sectors and the modes from which it draws the maximum net benefit from liberalization and commit itself to these sub-sectors.

8.4 Regulatory Framework and Institutional Aspects

In the Ethiopian context, all national and sectoral policies and proclamations are prepared and issued by Federal institutions. The Regions are expected to issue their corresponding strategies, proclamations and rules adaptable to their local conditions. This also means that local administrative bodies of each sector will have corresponding regulatory frameworks.

The Ministry of Transport controls a number of modal or sub-sectoral institutions: Transport Authority, Ethiopian Civil Aviation Authority, Ethiopian Airports Enterprise, Ethiopian Shipping and Logistic Service Enterprise (ESLSE) merger Ethiopian Shipping Lines (ESL), MTSC and Ethiopian Dry Port Enterprise (EDPE), Ethiopian Maritime Agency, Ethiopian Railways Enterprise, Ethiopian Road Authority (ERA) and Ethiopian Road Construction Enterprise (newly established)

Corresponding to the federal system structure, there are regional and local level structures. These are regional road and transport agencies and road construction enterprises. The inland water transport sub-sector has representative institutions in Amhara and Gambella regional states.

During the last 20 years, government institutions have been merged/mixed, separated, reorganized, and in some cases, dissolved in one way or another. This measure has created instability in the overall transport sector. Consequently, gaps and overlap of activities have been observed. For instance,

the former Ministry of Infrastructure comprised transport, communication and construction sub sectors. Later on, this Ministry was split into the Ministry of Transport and Communication on one hand, and the Ministry Works and Urban Development on the other. Immediately thereafter, the Ministry of Transport and Communication was split into two independent ministries: Ministry of Communication and Ministry of Transport.

Ethiopian Road Transport Authority (the former RTA) was renamed Transport Authority (TA), with the assumption that, the Authority will manage and regulate some additional sub-sectors, such as maritime and rail. But, the Authority did little with the other sub-sectors, and for a very short period of time. Despite this assigned responsibility, the Authority is now mainly working on road transport activities.

There is no specified government organization or institution for the mode of continuous flow system transport - mainly pipe lines, slurry pipes and conveyor belts. These are mostly, dispersed in different private and government institutions.

Regional road sub-sector transport and construction bureaus were mainly working on driving licensing, vehicle inspection and registering, traffic safety, local road construction management (supervision) and construction of *woreda* roads etc. The bureaus have corresponding zonal, *woreda* and urban center offices. According to the establishment proclamation, their focus is on sustaining the safety and security of passengers, cargoes, vehicles and other properties. But because of the sector's capacity problems and absence of modern systems of sectoral management, problems of safety are worsening across the country. Frequent traffic accidents are taking place and becoming commonplace. The sub- sector has no problem of issuing standardized regulatory frameworks, but the problem lies in weak implementation capacity,

attitudes of operators, drivers, and controllers, and in some cases, government staff. Concerning vehicles and drivers a number of improvements have been made in the regulations, but changes are slow in coming, or they are very minimal.

Another critical issue or constraint of the sector as a whole is that the country has no specialized institutions (at whatever level) to train people in transport management, planning, economics or engineering though marine engineering complex has been established recently at Bahir Dar University.

The Ethiopian government has established the Ethiopian railways transport enterprise with the responsibility of expanding rail transport infrastructure and services. This enterprise is going to manage and regulate rail transport as a whole, through concession or outsourcing, or managing the operation itself, depending on the existing conditions.

In the airways transport sector, the ECAA manages the international and local aviation operations and activities. An Ethiopian Airports Enterprise has been established recently to manage all international and local airports as well as landing strips so that landing and take-off access will gradually expand throughout the country, especially to promote and expand the tourism sector. Air transport services are provided by the state-owned EAL that operates along both domestic and international routes. A few private airlines have also been licensed for domestic routes and a couple of them have started operating.

In maritime and multi-modal transport services, the recently merged new enterprise (ESLs, MTSC and Ethiopian Dry Port Enterprise (EDPE)) is expected to play the role of regulation, operation and controlling the respective sub-sectors.

In the road transport sub-sector, the responsibility for management and development of roads is allocated on a functional or usage basis. ERA is responsible for the federal, feeder and link-road network.

8.5 Pricing of Transport Service

Transport prices are the rates charged by a transport company or a freight forwarder to the shipper or importer. They are set through negotiation between the shipper and the transport service provider. Transport prices normally cover transport costs, the operator's overheads and profit margin.

Transport prices are determined by a set of different factors. These include: low productivity of the trucking industry, notably due to infrastructure constraints (Pedersen, 2001), low levels of competition between service providers (Rizet and Hine, 1993), or weak infrastructure in general (Limao and Venables, 2001).

Freight transport costs depend on different factors: economies of scale in truck size (which favor the use of large trucks); backhaul possibilities (which depend strongly on the demand pattern) empty-running and idle time due to seasonal variation in demand; restrictions on working hours; road conditions (such as mountainous terrain, deteriorated pavement and traffic congestion); standards of trucks in terms of design and condition (which affects speed and fuel consumption rates; provision of spare parts and other inputs); quality of services offered (specialized freight services may involve higher costs); and input or factor prices of labor, vehicles, spares and fuel; as well as quality of management (RTA, 2002:23).

Presently, the cost of road freight transportation in the county is determined by market forces. The operators and lessee will negotiate individually, without

official references to the existing market. In this respect, the role informal brokers play is very significant.

Except the Ethiopian Airlines international flights all other transport services, such as public road transport, local air flight, and some of the inland water transport and Ethiopian shipping lines fares are fully or partially fixed. Before the suspension of its service, the Ethio-Djibouti rail transport was providing service on a fixed-rate basis.

Among the factors that affect the availability of the transport service, transport tariff is obviously fundamental. It is the price that transport agencies receive for the costs they incur and the users pay for the services they get that is the crux of the problem. Given this, whether or not such a price is capable of allowing transport service providers to stay in the sector, thereby inducing additional investors to enter into the business, and enabling users to get efficient and competitive service is a crucial question.

Bus fares have been deregulated for small and medium buses in the inter-city sector. For long distance they remain controlled/regulated by the Transport Authority though the TA always gives due consideration to requests made by the associations for increased fares.

Prices for premium services are not controlled and may be set by the operator. This applies, for instance, to the premium long-distance bus services recently introduced by Selam Bus and SKY Bus Lines, where the fares are assumed to be agreed upon between operator and passenger.

Until very recently, city bus (Anbassa) fares had been subsidized by the City Government. More recently, however, the level of subsidy has been adjusted.

The subsidy is presently 0.10 Birr per trip; the total amount paid is based on the record number of tickets sold AACCSA (2009).

Since 2005, to address the shortage of buses/taxis, midi-buses have been supplied and thus have helped to some extent, their fares lying between those of the city buses and the minibus taxis. The normal sedan automobile taxis are mostly working freely based on negotiation with clients in need of their service. These taxis are mostly stationed at some fixed points, waiting for prospective clients, and mainly working on contract basis.

Chapter Nine

Transport and Economy: Linkage Analysis

9.1 Theoretical Arguments

The impacts of transport on economy have been recognized by earlier economists. For instance, Smith (as quoted in Haggets, 1972), states that transport stimulates agricultural production, by opening up remote areas, narrows regional inequality, and as a result induces better territorial integration. Rostow (as quoted in Haggets, 1972), asserted that the early provision of transport infrastructure is a prime factor in the realization of the economies of take-off into growth.

The transport-growth link is embedded in the theory of allocative externalities and the particular role of transportation in activating such externalities in various markets. Allocative externalities are regarded as a major cause of resource reallocation in the economy, emanating from the non-compensatory impact of the economic behavior of one economic entity on the utility level of another.

Transportation improvements can potentially incite positive externalities that may exist in various markets and consequently improve productivity (mainly of labor), enhance output, reduce production costs and promote more efficient use of resources. The combined effect of these impacts is regarded as economic growth, which can be measured by annual changes in employment, in output and productivity. These allocative externalities are typically represented by economies of scale, size, scope, agglomeration, density and network. Thus, for transportation investment to produce economic growth, it

is necessary that such externalities will, in fact, be present in specific markets. In turn, they will generate production, consumption and factor utilization benefits, namely, economic growth. These benefits must be *in addition* to the primary transportation benefits that have prompted them.

Transportation investment generates two prime effects: “indirect effects”, mainly economic multiplier impacts, and “direct effects” defined in terms of accessibility improvement impacts. The first category is short-term and relates to the public-work nature of the investment, as it generates employment and income in the local area. The effect lasts throughout the project’s implementation period. The second category contains the primary travel benefits, whose magnitude and spatial distribution depend on the specific transportation facility (e.g. rail, port or highway) and the features of the region. These benefits, in turn, are assumed to generate long-term growth effects as they improve the economic performance of individuals and firms and generate more efficient location patterns.

It is widely acknowledged that transport has a crucial role to play in economic development of a country. Adequate, reliable and economical transport is essential, though not sufficient, for the social and economic development of rural areas in developing countries.

The direct impact of transport on production at a location is derived from three effects: lowering of production costs; increased producer prices; and encouragement of investment. The reduction in production costs results from three main factors. Firstly, improved transport lowers the delivery costs of inputs to the producer. Secondly, the reliability of transport services, lack of which may bear the risk of spoilage of perishable products. Finally, improved

transport can broaden the labor pool to which a production facility has access.⁴⁹

Transport sector improvements can serve as a catalyst that promotes a virtuous circle of economic development. The reduction in input costs and improved producer prices lead to improved profitability of agricultural and industrial production, creating an incentive to increase output. At the same time, greater access to investment funds permits the expansion of the capacity required to enable producers to expand production in accordance with this incentive, and also facilitates upgrading of the technology of production credit. Economies of scale combine with improved productivity from capital deepening to further improve margins, and provide additional impetus for investments. Increases in levels of production bring with them increased demand for transport services, improving profitability and encouraging further investment in transport itself⁵⁰.

According to ECMT (2001)⁵¹, there are three basic ways in which transport can fit into a typical growth model: as an investment and productivity enhancement, as a contributor to market integration and as an endogenous contributor to total factor productivity.

The aggregate investment approach is the most familiar and has been the subject of much debate over the past decade, following the contribution of Aschauer (see Aschauer, 1989, for an initial description and Munnell, 1992;

⁴⁹ Mari E Pangestu and Yuri Sato, *Waves of Change in Indonesia's Manufacturing Industry* (Tokyo: Institute of Developing Economies, 1997)]

⁵⁰ UNESCAP: Transport and development, http://www.unescap.org/ttdw/Publications/TFS_pubs/pub_2017/pub_2017_ch3.pdf accessed March 10, 2012.

⁵¹ **European Conference of Ministers of Transport (ECMT), 2001, Transport and Economic Development**, Report of the Hundred and Ninth Round Table on Transport Economics Held In Paris on 29-30 March 2001.

Gramlich, 1994; and Transportation Research Board, 1997, for good reviews of the subsequent debate). This approach treats infrastructure as a direct injection into the economy, modeled as an additional factor in the aggregate production function, which has the effect both of increasing the level of economic activity and of enhancing the productivity of private capital. This is achieved through public infrastructure acting as a public good; better transport means more efficient firms. Another approach represents transport improvements as time savings, the value of which can be regarded as a gain in productivity from the labor employed. The impact on economic growth will be less if the increased productivity is absorbed into higher wages.

The impact of transport investment on market integration means reduced transport costs; this, in turn, enhances export opportunities, leading to increased output. It also introduces the threat of import competition, which leads to restructuring and the increasing efficiency in industry to reduce production costs. Lower transport costs may also have the effect of widening labor market areas (and the markets for other factors), leading to a reduction in factor costs.

A reduction in transport costs is expected to increase opportunities both for exporting and importing. The greater exposure to imports is seen as intensifying competitive pressures on firms and thus promoting greater efficiency, both through restructuring of industry and encouraging leaner production, and thus reducing production costs through raising productivity. The process is analogous to that of the removal or reduction of tariffs or non-tariff barriers. Another channel of influence might run directly from lower transport costs to productivity and production costs, through the implications of better transport provision, as firms are able to reap more internal economies of scale in production or obtain productivity gains from agglomeration effects.

The impacts of reduced transport costs on different sectors of the economy will be significant, especially at the regional level. Market size or market access effects may encourage re-location of some firms towards the “centre”, while changed cost differentials may provide an offset which draws others to the “periphery”. The process of “creative destruction”, in which economic development leads to the disappearance of many old jobs at the same time as new ones proliferate, may be enhanced. Some employers may face an enhanced effective labor supply as commuting costs are reduced, and respond by increasing investment. Depending on the relative strength of these forces, either convergence or divergence between regional income levels may result.

According to the literature on endogenous growth, certain changes will lead to a continuing increase in the rate of growth in the economy, rather than a shock to the system which shifts the level upwards but ultimately returns to an exogenously given underlying rate of growth. Improvements in transport will have an impact on the process of industrial restructuring through the entry and exit of firms and the seeking of wider markets, on the rate of innovation and technology transfer (e.g. through the parallel improvement in the flow of information) and hence on the growth of total factor productivity.

9.2 Transport and Economy: Linkage Analysis

In this section, attempt is made to examine the role of transport in influencing the location of agriculture and industrial activities in Ethiopia. In addition, attempt is made to estimate the transport margin of export commodity of Ethiopia.

9.2.1 Transport and Agriculture Activity Location

Access to transport facilities and their costs are critical in increasing agricultural productivity through increased accessibility to markets. One of the important factors to farmers' decision is whether to produce cash or subsistent crops, which in turn, depends on the availability of markets. Rural transport plays an important role in reducing transaction costs in input and output markets for farming households. Central Statistical Agency (CSA) estimates that more than 48 percent of sampled households in the Welfare Monitoring Survey do not use transport services because either it is too far (no access) or it is too expensive (CSA, 2004). Because of limited access to, and high cost of, transport, smallholder farmers usually devote much of their resources to subsistence crops than to cash crops that have greater yield and market return (see Omamo, 1998 for related review).

A survey has been conducted to see how access to and costs of transport services have an impact on smallholder farm productivity and on the behaviors of farmers in making choices as to which crop to grow. Rural transport is incorporated into an agricultural household model to show that transport availability and its cost helps to access input and output markets in an effort to increase productivity and efficiency in cropping choices. Group mean difference tests are employed to see productivity differences among households of different accesses to transport and hence to nearby major markets. Moreover, an unordered multinomial model is specified to show the impact of cost of transport on cropping choices. Data from 200 farm households were collected in Mojanawadera and Tehuledere woredas (Amhara), Woliso and Omonada woredas (Oromia). These woredas and the kebeles, from which households were selected, were identified based on crop diversity and variability of access to transport.

Survey Findings

Households from the sample of four woredas produce 14 major crops, ranging from subsistence crops, such as teff, barley, sorghum to cash crops, such as pepper and chat (see Table 9.1). Teff and wheat are the major produce in the woredas and constitute 33 percent (20 percent wheat and 13 percent teff) of the total sample. Households who produce pepper, lentils, coffee, chat, enset and fenugreek constitute a quarter of the total sample. Respondents were asked to report whether what they produce is completely for sale or completely for consumption, or for both. Of those households who grow pepper and lentils, 76 percent and 72 percent, respectively, reported that they produce for sale. Moreover, chat and fenugreek are produced for sale for 50 percent and 62 percent of households, respectively. However, only 11 percent of potato growers do so for sale. Fifty-five percent of coffee farmers and 54 percent of chickpea farmers use their produce for both sale and consumption.

Table 9.1: Share (in percent) of Households by Crop and Purpose of Production

Crop Type	Frequency	Percent	Sale	Consumption	Both	All
Teff	98	13.0	7.1	74.7	18.2	100
Barley	43	5.7	0.0	83.7	16.3	100
Wheat	149	19.8	4.7	70.9	24.3	100
Maize	68	9.0	3.1	58.5	38.5	100
Sorghum	90	12.0	2.2	85.4	12.4	100
Beans	61	8.1	1.6	73.8	24.6	100
Pepper	25	3.3	76	16.0	8.0	100
Lentils	32	4.3	71.9	25.0	3.1	100
Coffee	20	2.7	0.0	45.0	55.0	100
Chat	44	5.8	50	18.2	31.8	100
Enset	55	7.3	7.3	89.1	3.6	100
Potatoes	27	3.6	11.1	55.6	33.3	100
Chickpeas	28	3.7	7.1	39.3	53.6	100
Fenugreek	13	1.7	61.5	23.1	15.4	100
Total	753	100				

Source: EEA/EEPRI Survey

Households who grow other types of crops for sale are less than 8 percent. More than 59 percent of households who cultivate cereals, such as teff, barley, wheat, sorghum and maize do so for consumption. To compare it with another dataset, a national level data (see CSA, 2011) shows that the percentage of cereal crops going to the market is, on the average, less than 15 percent.

As mentioned above, one of the factors affecting the behaviors of farming households in cropping choices is rural transport and proximity to markets. Table 9.2 shows the mean distance and mean cost of transport per quintal of grains from plots to local and zonal markets. On the average, plots are 5 km far from local markets, while they are 55 km away from zonal markets with a very big range of 165 km. To put it into perspective, CSA's Welfare Monitoring Survey shows that close to 70 percent of the sampled rural households travel more than five km to buy agricultural inputs, such as improved seeds and chemical fertilizer (see CSA, 2004). While the transport cost to take a quintal of grain to the nearby local market is close to Birr 10, it costs producers more than Birr 16 to transport the same amount of produce to the nearby zonal market. The fact that there is a huge difference between households in the distance and its concomitant cost of transport to markets can help us see differences in the productivity of crops and behavior of farmers' cropping choices.

Table 9.2: Distance and Cost of Transport of a Quintal of Grain from Plots to local and zonal markets

Variable	Obs.	Mean	Std. Dev	Min	Max
Distance in km from local markets	748.0	4.9	2.2	0.3	11.0
Distance in km from zonal markets	739.0	54.7	33.3	4.5	170.0
Cost in Birr to transport a quintal of grain to local markets	725.0	9.7	14.1	0.0	77.0
Cost in Birr to transport a quintal of grain to zonal markets	626.0	16.2	7.7	6.0	40.0

Source: EEA/EEPRI Survey April 2012

To see how distance and cost of transport affect productivity, group mean difference tests were made on yield between households who have access to transport services to major markets and those who do not (see Table 9.3). It was found that the difference in productivity, measured in output in quintals per hectare of land (yield), is significant. While the yield for those who have access to transport to the nearest zonal markets (i.e. nearer to major towns/markets) is 17 quintals per hectare, and those who do not have such access, on the average, produce 13 quintals per hectare. The difference was found to be statistically significant. Proximity to markets through modern rural transport provides farm households with the input markets for their production and bigger demand for their outputs.

Table 9.3: Yield mean differences among households with and without access to markets

Access to Transport	Obs.	Mean Yield	Std. Err.	[95% Conf. Interval]	
With Access	606	16.7	1.0	14.7	18.7
With No Access	127	11.6	2.0	7.6	15.7
Combined	733	15.8	0.9	14.1	17.6
Diff=mean(yes)- mean(no)				t=2.1224	
Ho: Diff=0				Deg of fr. 731	
Ha: Diff<0		Ha: Diff !=0		Ha: Diff >0	
Pr(T<t)=0.9829		Pr(T > t)=0.0341		Pr(T>t)=0.0171	

Farm households make crop choice decisions to maximize profit. Choices of crops by individual farmers can be examined at a household level. However, farmers might mix crops and combine two different crops in their different plots of land. Part of this problem can be avoided if the unit of analysis is made at plot level. The full set of choices is assumed to be mutually exclusive, in the sense that the choice of a specific crop does not have any impact on the choices of other crops. For an individual plot *i* and specific crop choice *j*, a general model for the probability that a farmer chooses a given plot the *jth* crop can be specified as:

$$P_{ij} = \Pr[C = j] = F_j [x_i, \beta] \quad j = 1, \dots, m, \quad i = 1, \dots, n,$$

Where *P_{ij}* is the probability that a given crop *j* is chosen for plot *i* by a farm household; *C* is crop type; and *x_i*, is household and plot characteristics, access and cost of transport.

Annex 9.1 provides estimation of coefficients of multinomial logistic regression. Five cereal crops (teff, barley, wheat, oats and maize) are considered as one group, as these crops are similar in the sense that they are

used mostly for consumption (and the data confirms this, see above). These crops as a group are also considered as base-group for the model.

The estimated result shows that the coefficients of the cost of transport for pepper, chat, enset and beans is negative and significant relative to the base-group. An increase in cost of transport, due to the length of distances traveled or limited transport services, for example, would reduce the probability of these crops being chosen by farmers relative to the base-group (i.e. cereals). The significance of these coefficients, however, changes as the base-group changes. A test of overall significance was given by the Wald test, which was found to be significant. Of the available crops, pepper, chat, lentils and fenugreek are produced mainly for sale. The results in Annex 9.1 shows that the coefficient for the cost of transport for the first two of these cash crops is consistent with the hypothesis that these crops are grown in areas closer to markets and where cost of transport is lower.

9.2.2 Transport and Industrial Activity Location

The earliest economic theories of industrial location argued that transport plays critical role in decisions concerning where industrial activities should be located. The theory of regional economics is the first to bring spatial factor into economic research system, and the theory of neo-classical location considers the factor of transportation costs as the most important variable. (Von Thunen, 1826 as quoted by Yao Ying) believes that transportation costs make different crops distributed in different areas, and agricultural production distributed around the central city just like a circle. Weber (1909 as quoted by Yao Ying) states that industry is located at points with minimum transportation costs from various angles. Industry location according to Ohlin (1931, as quoted by Yao Ying) depends on transportation costs, assuming that capital and labor flow freely. Among the recent literature, Krugman (1999, as

quoted by Yao Ying) asserted that transportation cost is the most decisive factor in industrial location decision. Masood (2007) identified transportation to be one among the critical factors for industrial location decision.

In industrial location planning, many authors (Greenhut, 1959; Greenhut and Colberg, 1962; Dean, 1972; Nicholas, 1974; Spooner, 1974; Foster, 1977; Brown, 1979; and Moriarty, 1980 as quoted in Masood A. 2007) repeatedly emphasized the importance of critical demand factors (location of competitors, proximity to consumer markets, etc.), and cost factors (land, labor, materials, transportation, etc.).

Overall, the literature bears witness that industrial location decisions are closely linked to the availability of transport infrastructure and services. In this vein, attempt is made in this report to look into the role transport played in influencing the location of manufacturing industries in Ethiopia through conducting a survey.

Manufacturing industries of Ethiopia are concentrated in Addis Ababa and the four major regional states, altogether accounting for about 97 percent of the total large- and medium-scale manufacturing industries operating in the country. According to CSA (2009/10) about 40 percent, 21 percent, 13 percent of the total large- and medium-scale manufacturing industries are located in Addis Ababa, Oromia, and Amhara regions, respectively. The three regions have better infrastructure coverage and quality; markets for the products of the manufacturing industries; sources for the raw materials used in the industry, and skilled manpower, compared with the rest of the regions. A survey was conducted on manufacturing industries operating in the three major regions—namely, Oromia, Amhara and Tigray—and Addis Ababa. Of the total sample size of 103 industries, about 24.3 percent, 28.2 percent, 29.1

percent and 18.4 percent were drawn from Amhara, Tigray, Oromia and Addis Ababa, respectively.

Survey Findings

The collected data are analyzed descriptively and the findings of the survey are given in the following paragraphs.

Manufacturing industries have preference to a mode of transport that best suits them. Of the total responding industries, 91.3 percent, 5.8 percent and 2.9 percent stated that their ideal (first best) mode of transport are roads, rail and air, respectively. To the question whether they have access to the services of their first best mode, those industries for which road and air transport are first best responded affirmatively while those for whom rail is the first best responded negatively. Thus, industries requiring railway are compelled to use the second best mode of transport, thereby incurring higher transport cost. This, in turn, affects the competitiveness of such industries (Table 9.4).

Table 9.4: Manufacturing Industry's Ideal Mode of Transport

Modes	Freq	Freq in %
Road	94	91.26
Rail	6	5.83
Air	3	2.91
Total	103	100

Source: EEA/EEPRI Transport Survey, March 2012

Distance from a factory site to the nearest transport infrastructure is critical for an industry, since the cost of constructing and maintaining roads that link factory site to the nearest highway is too high for an industry to bear. According to the survey, manufacturing industries, on the average, are located

within 2.5 km, 20.4km and 34.3 km from highways, railways and airports, respectively. This shows that manufacturing industries are located within close proximity to both land and air transport. It also shows that airports are accessible for the majority of manufacturing industries (Table 9.5).

Table 9.5: Distance to the Nearest Highway, Railway and Airport

Variable	Observation	Mean	Std. Dev.	Min	Max
Distance from the Nearest Highway	88	2.486477	2.650686	.01	20
Distance from the Nearest Railway*	38	20.43289	90.7873	.01	564
Distance from the Nearest Airport	70	34.26429	39.23607	2	120

Source: EEA/EEPRI Transport Survey, March 2012

*The existing Djibouti - Dire Dawa - Addis Ababa railway line

In order to know how far industries are located from their major raw material sources, a question was posed to respondents. The finding shows that manufacturing industries are, on the average, 243.4 km, 333.8 km and 369.5 km away from their first major, second major and third major sources of raw materials, respectively. The relative proximity to the major sources of raw materials hints that in the location decision proximity to raw materials was considered. In fact, the distances of processing site from raw materials differs from one type of industry to another, depending on their specific nature, for instance, industries having low output-to-raw material- weight ratio prefer to locate themselves near raw material sources to reduce transport cost (Table 9.6).

Table 9.6: Distances from three major intermediate inputs

Variables	Observation	Mean	Std. Dev.	Min	Max
Distance to first major source	72	243.4306	260.2957	1	783
Distance to second major source	49	333.7551	307.1368	1	1098
Distance to third major source	29	369.5172	308.1355	2	1198

Source: EEA/EEPRI Transport Survey, March 2012

Although distance is one factor, it is not the only one to determine the cost of transport between sites. In transport-tariff setting a kilometer of gravel surfaced road charges higher price than same distance traveled on asphalt-surfaced one. Hence, the next important factor in the determination of cost of transport is the condition of roads linking the two sites. With regard to the question on the condition of roads linking industries to their major three sources of intermediate inputs, the majority of the respondents ranked them from good to excellent. This shows that both the distance and the quality of roads linking the industry sites to their major raw material sources are not sources of the cost of transport problems in the sector (Table 9.7).

Table 9.7: Quality of Roads Linking the Factory to raw material sources

	First major source		Second major source		Third major source	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Excellent	46	56.1	29	53.7	15	48.39
Very good	2	2.44	2	3.7	2	6.45
Good	22	26.83	16	29.63	11	35.48
Poor	12	14.63	7	12.96	3	9.68
Obs	82	100	54	100	31	100

Source: EEA/EEPRI Transport Survey, March 2012

In general, industries can be located in a particular region for different reasons, economic as well as non-economic. According to the survey, for 32 percent, 16.7 percent, 15.3 percent and 15.3 percent of the manufacturing industries, the major location decision was taken based on proximity to market, proximity to raw materials, availability of transport and access to skilled labor, respectively (Table 9.10). In fact, the weight of the different factors varies from one sub-sector to the other. For the food and beverages sub-sector, for instance, proximity to market is the first major reason. This is in line with the proposition that perishable goods producing industries should be located close to consumers, since there is the risk of spoilage. For tanning and dressing of leather, transport is the first major reason. For wood and wood products, proximity to raw materials is the priority (Annex 9.2).

Table 9.8: Reasons for Locating Manufacturing Industries

Zone	Market	Transport	Agglomeration	Expectation of betterment	Access to land	Access to unskilled labor	Access to skilled labor	Raw materials
West Gojam	84.6	15.4	0.0	0.0	0.0	0.0	0.0	0.0
East Gojam	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Gonder	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mekelle	9.5	0.0	0.0	0.0	14.3	4.8	33.3	38.1
Adigrat	0.0	0.0	0.0	22.2	0.0	0.0	33.3	44.4
Finfine Zuria	14.3	28.6	42.9	0.0	14.3	0.0	0.0	0.0
East Shoa	16.7	50.0	25.0	8.3	0.0	0.0	0.0	0.0
Akaki Kality	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Lideta	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kirkos	0.0	0.0	50.0	0.0	0.0	0.0	50.0	0.0
Total	31.9	15.3	9.7	4.2	5.6	1.4	15.3	16.7

Sources: EEA/EEPRI Transport Survey, March 2012

One of the constraints to the low competitiveness of the industrial sector is the poor transport infrastructure and services. To this end, attempt is made to estimate the share of the cost of transport in the total cost of production of large- and medium-scale manufacturing industries from the data obtained from the sampled enterprises. According to the estimation, the cost of transport in the overall cost of production is, on the average, 8.7 percent. The cost share, however, ranges from less than 1 percent for some sub-sectors to 24 percent for others (Table 9.11).

Skilled and unskilled workers normally live in different locations from their workplace, usually unskilled ones living in distant places. Hence, transport infrastructure is relatively critical for skilled workers than unskilled ones. According to the survey, the mean distance of skilled labor and unskilled labor residential area from factory sites is 3.5 km and 6 km, respectively. The survey also indicated that some skilled workers travel up to 90 kilometers per day to and from workplaces. This is in line with the expectation with regard to the patterns of the residences of differently skilled workers around their work places (Table 9.11).

Table 9.9: Share of Transport Cost, Residence Pattern of Workers around the Site

Variables	Observation	Mean	Std. Dev.	Min	Max
Share of transport in total cost of production	67	8.732537	8.3079	.01	24
Skilled labor	102	7.303922	5.974035	1	45
Unskilled labor	102	5.345098	3.482762	1	20

Source: EEA/EEPRI Transport Survey, March 2012

Last but not least, the survey has attempted to bring to light the proportion of workers' income that is claimed by transport services. The finding shows that manufacturing sector workers, on the average, spend Birr 154 per month on

transport services for the trip between home and workplace. This is about 13.8 percent of the average monthly wage. (Birr 1,121⁵²) of workers in the sector. This proportionately high transport expenses relative to wages, will force workers to cut their spending on other component of their consumption basket, mainly food. This, in turn, will result in the decline in workers' productivity and hence translates into lower competitiveness for the enterprise.

9.2.3 Transport and Trade

It is a well established fact that the export sector plays a crucial role in the economy of developing countries. Despite the importance of the sector to the Ethiopian economy, the productivity and competitiveness of the sector is very low due to variety of reasons.

Of the major constraints, physical factors are at the heart of the country's poor export performance. Physical factors refer to infrastructural facilities necessary to carry out trade effectively. It is obvious that to be able to produce and export, a minimum level of physical infrastructure is needed. Sound infrastructure facilitates the mobility of the means of production, thus improving productivity and reducing cost, which are key factors in the area of competitiveness.

Transportation facilitates production and trade. Inadequate infrastructure and services result in increased production and transaction costs, which, in turn, reduce the competitiveness of the economy and hinder it from achieving the overall development goals (Sophorndara, 2009). For example, it costs 0.07 cents and takes 27 days to ship one shirt from Bangkok to New York.

⁵² Obtained by dividing the total wages and salary of large and medium scale manufacturing industries by the number of employees in the sector for the year 2009/10.

However, to ship the same shirt from Addis Ababa to New York, it costs 0.11 cents and takes 32 days (Bemnet, 2004). This indicates that Ethiopia is less competitive than Thailand in terms of shipping the same commodity due to poor transport infrastructure and import-tracking capacity.

Transport and other related costs account for a sizeable proportion of total cost of export goods, sometimes reaching up to 20 percent. Indeed, according to some analyses, the relatively low level of African trade flow is largely due to poor infrastructure, with the elasticity of trade flow with respect to transport costs estimated to be minus-three (-3) (Limao and Venables, 2001). Limao and Venables (2001) have indicated that the median transport costs for a landlocked country are about 46 per cent higher than the equivalent costs in a median coastal economy, with distance accounting for only 10 per cent of the difference. In particular, transport cost in Africa is one of the highest by any standard. UNCTAD (2010) reported that Africa's transport cost as a percentage of the total value of imports was about 13 per cent in 2000, compared with 8.8 per cent for all developing countries and 5.2 per cent for developed countries. It has also been shown that poor road infrastructure is responsible for 40 per cent of the transport costs in coastal countries and 60 per cent in landlocked countries.

The prices received by growers of coffee in Ethiopia are less than 20 percent of the retail price of the commodity and, in some cases they fall below 10 percent. The average annual price paid to growers in Ethiopia per pound was less than 0.6 USD in 2000, while the price paid to growers in Brazil was 0.66 USD. By the close of the decade this price rose to 1.5 USD per ounce in Ethiopia. In Brazil, however, price to growers per pound of Brazilian naturals rose to 2.3 USD, which is nearly 50 percent higher than its equivalent price in Ethiopia (ICO, 2012). These imply that poor transport infrastructure and the

related high transport cost both have the potential to undermine the international competitiveness of Ethiopian commodities.

9.2.3.1 Transport Infrastructural Facilities and Competitiveness

Infrastructure development is, in general, a key element of a country's ability to produce and move goods. Poor infrastructure is a major impediment to trade, competitiveness and sustainable development in most developing countries (Mbekeani, 2007). Specifically, export competitiveness is closely connected with the trading environment, which is affected by a series of physical and non-physical factors, such as the quality of logistics services, transport infrastructure, government institutions, procedures and formalities (Sophorndara, 2009). On similar account, the World Bank indicates that export competitiveness rests on three complementary pillars, of which logistics and transport infrastructures are the key.

Poor transport infrastructural facilities have important implications for the competitiveness of a country both as destination of foreign direct investment and participant in international market as an exporter. USITC (2009) has showed that poor conditions in the SSA land transport, maritime transport, and electricity infrastructure sectors have increased both the direct and indirect costs of producing and exporting goods and services, thereby reducing the export competitiveness of a wide range of SSA industries. The textile and apparel industries of Kenya and the footwear industries of Ethiopia are typical cases where inefficiencies of transport and other infrastructural facilities left African producers less competitive in international markets.

The impact of poor infrastructural facilities on export competitiveness manifests itself in different ways (USITC, 2009). The most common and direct channel is its impact on production costs. Less efficient transport service

increases cost of getting the product to the market and cost of acquiring inputs, such as hides and skins, for leather production in Ethiopia, and textiles for apparel production in Kenya. High transport costs resulting from poorly functioning facilities are embedded in production costs and are incorporated into the delivered price of products. This increase in production costs resulting from high transport costs reduces export competitiveness directly.

Poor infrastructure also increases the time required to ship goods from production area to the market place, which increases the economic distance between them. In contemporary trading system, where speed to the market is increasingly valued in international trade, and slow delivery effectively increases costs, increased economic distance erodes the competitive power of producers on the international market. Specifically, speed to markets is crucial for perishable products, such as agricultural goods, or products that become obsolete in the market place because of technological change (e.g., electronics) or products with shifting consumer preferences (e.g., fashion apparel) (USITC, 2009). Hummels (2007), by calculating the tariff equivalents of time in trade, indicated that poor infrastructural and logistic facilities are more effective barriers to developing countries' export in the international market than customs barriers.

In general, inefficient transport system and the related high transport cost render export commodities less competitive in international market through its direct and indirect impact. However, such high-cost and low-quality infrastructure services increase the production costs of certain products more than others. Therefore, poor infrastructure conditions affect not only the competitive power of African countries but also the type of goods these countries export and the extent to which SSA countries undertake downstream processing of the basic commodities that they produce (USITC, 2009). It is against such backdrops that in almost all indices used to measure

the competitive power of a given economy, infrastructural facilities are taken as an important pillar.

On Logistics Performance Index (LPI) Ethiopia ranked 123rd in the world with LPI measure of 2.41 (on 1 to 7 scales) in 2010 up from 2.33 in 2007. This figure is marginally below the sub-Saharan average of 2.42 in 2010 and far less than any other regional average. Ethiopia's competitors in the world coffee markets, such as Brazil, Kenya, Tanzania and Uganda for instance, have LPI scores of 3.2, 3.59, 2.60 and 2.82 and ranked more competitive than Ethiopia. Similarly, based on the Global Competitiveness Index (GCI) Ethiopia is ranked as the 106th most competitive country in the world. Kenya, Ethiopia's competitor for some commodities in the international market, is ranked more competitive than Ethiopia. With respect to the infrastructure pillar, Ethiopia is again ranked less competitive than most of its competitors, such as Kenya, Brazil and other coffee exporting countries.

In sum, there is no doubt that poorly developed infrastructural facilities and the related higher transport costs impose serious constraints on the over-all socioeconomic development efforts of Ethiopia. While high transport cost favors import substitution activities, it also renders export commodities less competitive in the international market. This is because the transport cost accounts for the higher percent of the export value in Ethiopia. Indeed, some studies indicate that Ethiopia's transport cost compares well with other countries on per ton per kilometer basis. Ethiopia's domestic transport cost on per ton per kilometer basis is between \$0.04 and \$0.06, while that of Zambia is \$0.07, Zimbabwe's \$0.03 and South Africa's is the lowest rate with \$0.02 per ton kilometer (Beamnet, 2004). Yet the cumulated distances, along with the delays in time and lengthy procedures related to customs clearance make transport cost an impediment to the country's export competitiveness.

9.2.3.2 Findings of the Survey

The objective of the study is to calculate the transport cost margins in the values of export commodities. To this end primary data were collected through a survey conducted in March 2012. In conducting the survey, the value chains⁵³ were followed from farm household levels to the exporters⁵⁴. The survey was undertaken in five *woredas* in two regional states: Southern Nations, Nationalities Peoples (SNNP) and Oromia regional states.

There are two⁵⁵ major channels in the coffee production and marketing systems of Ethiopia. One of these two value chains involves the traditional trade channels, which start from the producer end up with final consumers, with several small- and large-scale traders lying in between. Small-holder producers are responsible for 95 per cent of coffee production in Ethiopia, and are estimated to be 1.3 million (Petit, 2007). Small-holder producers sell their products to primary coffee collectors (*sebsabies*) in the nearby market or at their production site. These collectors then sell acquisitions either directly to suppliers (*akrabis*) or to the exporters through the central auction markets⁵⁶. Suppliers acquire red coffee cherries from collectors or producers and they then have to process their coffee before bringing it to auction. The exporter who buys coffee at the auction market exports it to the rest of the world. The second one follows farmer's cooperatives and unions. Farmers under cooperatives submit their products to the cooperatives. These

⁵³ A value chain is a supply chain consisting of the input suppliers, producers, processors and buyers that bring a product from its conception to its end use.

⁵⁴ In this study our objective is to calculate the domestic transport cost margins of the FOB price and we doesn't plan to calculate the total transport cost margin, which includes the maritime transport cost margins.

⁵⁵ Indeed, one can find other channels which emerge by mixing these two major chains.

⁵⁶ The central auction market is governed and facilitated by the Ethiopian Commodity Exchange (ECX), a government-owned central trading system, meant primarily for grains. The central system began trading in coffee in December 2008 and it trades with only spot contracts for immediate delivery of the commodities.

cooperatives pass it to unions. Cooperative unions either sell to exporters or directly export the coffee to international markets.

Taking these value chains into account, the survey was undertaken all along the chains, and small-holders, traders, cooperatives, unions, and exporters were interviewed. Specifically, the data collected were related to infrastructure, transport cost and other market information from a total of 45 small holders in 15 kebeles (peasant associations) selected from 5 woredas in two regional states. In addition, close to 35 cooperatives, traders, unions and exporters were also interviewed along the value chains of coffee production, trade and export. Furthermore, to know some structural and sector-specific factors hampering the efficiency of the transport sector, private transport enterprises were interviewed and data on freight costs and sectoral problems collected.

The transport cost (tariff) varies across different road types and different commodities. Specifically, the less developed the infrastructure the higher the transport cost would be. The survey indicates that the transport cost on asphalted road (main roads) is 0.53 Birr per ton per KM. The equivalent figure on off-main roads (gravel) is 25 percent higher than the cost on the main roads. Similarly, the cost on rural road is 0.78 Birr per ton per KM, which is 45 percent higher than the cost on asphalted roads (main-roads). This indicates that most export commodities, which have to be procured from rural areas where there are no asphalted and/or gravel roads, should have to endure these higher transport cost margins if they have to be offered to the final consumers at competitive price.

Furthermore, transport tariffs vary across different freight types in Ethiopia for different reasons. Transport tariffs for coffee are higher than those for other commodities because of higher risks of transporting the commodity and

the too-many and lengthy check points associated with transporting coffee. Similarly, the percentage margin of transport cost for different commodities is different because, technically, the transport margin depends on the final value (market value) of the commodities. In particular, the percentage margin of transport cost is high for less valuable and bulk commodities, such as petroleum and most primary commodities. On the other hand, it accounts a very small percentage of the highly valued, non-bulk items' final value or value added. This implies that international trade, theoretically, is possible only for commodities with low weight-to-value ratio, such as high value minerals and non-bulky valuable primary commodities.

Coffee, the single most important cash crop in Ethiopia, is one of the primary commodities with a relatively high value-to-weight ratio. Since this commodity grows in the remote rural areas where transport infrastructural facilities are less developed, transport cost has the potential to make the commodity uncompetitive on the international market. More than 85 percent of the growers in Ethiopia haul cherries using pack animals and human labor. As a result, it is difficult to get the direct transport cost of hauling the commodity to suppliers and cooperatives' washing stations. Yet, it is possible to calculate the imputed cost of the service. Similarly, the suppliers and cooperatives who process the coffee and bring it to the auction market haul it to the ECX regional centers. Finally, the exporters and cooperative unions collect the commodity from the auction market for direct export to the rest of the destinations.

The coffee has to be transported along these chains over varied distance and varied road types from the growing centers to the port of Djibouti. Specifically, the commodity is hauled for over 45 percent of the total distance from the growing centers to the port on rural roads by pack animals and less efficient vehicles. The total cost (imputed and explicit costs) of transporting

one quintal of the commodity from growing centers to the port can sometimes rise to more than 300 Birr. On the average the total transport cost for one quintal of the commodity is well above 200 Birr. This accounts for about 4.5 percent of the farm gate price of one quintal of the commodity, with the margin for some remote centers reaching 5 to 6 percent. Similarly, total transport cost as percentage of the margin between farm gate and port of Djibouti is well above 4 percent. Indeed, the margin is higher for those chains with low value addition and higher farm gate prices. Furthermore, total transport cost as percent of FOB value of the commodity is a little more than 2 percent on average, and rarely rises above 3 percent for some chains with high transport cost and for coffee types with low FOB value.

It should be mentioned at this point that the transport cost margin for coffee is relatively smaller than one expects it to be. However, there are several compelling reasons that justify the result. First, coffee is a commodity with high value-to-weight ratio. Consequently, a substantial increase in the transport cost does rarely reflect on the transport cost margin as percent of FOB. This transport cost may fall in the range of 20 to 30 percent margin for other commodities with low value-to-weight ratio, such as cereals and pulses, for example. Second, this transport cost margin doesn't include international transport and insurance costs, which is significant relative to its domestic counterpart. Studies indicate that the maritime transport costs constitute a significant portion of sub-Saharan Africa's transport cost margins. The transport cost margin calculated here also doesn't include other procedural and transaction costs related to transporting the commodity, such as port handling and customs clearance costs.

In the value chain analysis, the other factor with impact on the international price of commodities is the trade margin. Theoretically defined, trade margin is the difference between purchase price and selling price accounting for

transport and other related costs. In the coffee value chain, farm gate price accounts for about 40 percent of the total boarder price (FOB). This is in line with the ICO data, which indicates that farm gate price of Ethiopian coffee is less than 25 percent of the retail price of coffee in destination markets⁵⁷. The trade margin of suppliers, cooperatives, unions and exporters is roughly above 50 percent, without accounting for procedural and transaction costs. The suppliers and cooperatives reap close to 15 percent of the total final value of coffee, while suppliers account for 35 percent of the final price (i.e. FOB). This indicates how much the intervention of too many middle men and hence the transaction costs erode the benefits that growers could have reaped.

⁵⁷ The higher the value chain proceeds, the lower the share of growers. Alemayehu (2012) indicates that growers' share of the London Starbucks' total revenue from coffee is less than 5 percent.

Chapter Ten

Transport, Energy, Safety and Environment

10.1 Transport and Energy⁵⁸

Human activities are closely dependent on the usage of several *forms and sources of energy* to perform work. The demand for energy has been growing from time to time. There are enormous reserves of energy able to meet the future needs of mankind. Industrial development places enormous demands on fossil fuels. At the turn of the 20th century, the invention and commercial development of the internal combustion engine, notably in transport equipment, made possible the efficient movement of people, freight and information and stimulated the development of the global trade network.

At the beginning of the 21st century, the transition reached a stage where fossil fuels, notably petroleum, are dominant. Out of the world's power production of about 15 terawatts a year, 86% is derived from fossil fuels. Energy consumption has strong modal variations: **Road** transportation alone is consuming on average 85% of the total energy used by the transport sector in developed countries. **Maritime** transportation uses only 7% of all the energy consumed by transport activities. The **aviation** industry accounts for 8% of the energy consumed by transportation.

Further distinctions in the energy consumption of transport can be made between passenger and freight movement: Passenger transportation accounts

⁵⁸ The literature part of this section draws heavily on Jean-Paul Rodrigue, Claude Comotios, and Brian Slack (2009), *the Geography of Transport System*, second edition, New York.

for 60 to 70% of energy consumption from transportation activities. The balance goes to the freight transport.

Transportation is almost completely reliant (95%) upon petroleum products with the exception of railways using electrical power. While the use of petroleum for other economic sectors, such as industrial and electricity generation has remained relatively stable, the growth in oil demand is mainly attributed to the growth in transportation demand.

The extent to which conventional non-renewable fossil fuels will continue to be the primary resources for nearly all transportation fuels is subject to debate. Some studies estimate global resources for oil at about a trillion barrels, representing 30 years of reserves at the present rate of consumption. What is next? For sure it is the development of alternative energy sources.

Owing to the rising world oil prices and environmental concerns, there has been research and developments in alternative energy sources. The most prevalent alternatives being considered are:

- Biogas such as ethanol, methanol and biodiesel can be produced from the fermentation of food crops (sugar cane, corn, cereals, etc) or wood-waste.
- Hydrogen which is two times more efficient than gasoline and generate near-zero pollutants.
- Electricity, A pure battery electric vehicle is considered a more efficient alternative to hydrogen fuel propelled vehicle as there is no need to convert energy into electricity since the electricity stored in the battery can power the electric motor; and
- Hybrid vehicles consisting of propulsion system using an internal combustion engine supplemented by an electric motor and batteries, which provides opportunities combining the efficiency of electricity with the long driving range of an internal combustion engine.

In a free market economy, the introduction of alternative fuels has been witnessed leading to an increase in the global consumption of both fossil and alternative fuels and not to the substitution of crude oil by bio-based alternative fuels. This suggests that in the initial phase of an energy transition cycle, the introduction of a new source of energy complements existing supply until the new source of energy becomes price competitive to be an alternative. In a context where petroleum prices are relatively low to alternative fuels in the transportation sector requires very strong government interventions forcing energy suppliers to purchase available green energies on the market at a fixed price. Without strong regulatory controls conventional oil substitution by renewable vehicle fuel requirements (ethanol and biodiesel) will be relative and marginal. Only under the conditions of price equilibrium between conventional and alternative fuels supply could the market become an effective transitional force. Answering the energy demand of the transportation sector will rest on a delicate balance between technological improvements, behavioral changes and environmental policies.

Of the total energy consumption of the country, the share of fossil fuel (coal, oil, petroleum and natural gas) has been 6.3 percent, 6.7 percent and 7.1 percent in 2007, 2008 and 2009 respectively⁵⁹ indicating a slight increase in fossil fuel share in the energy sources of the country.

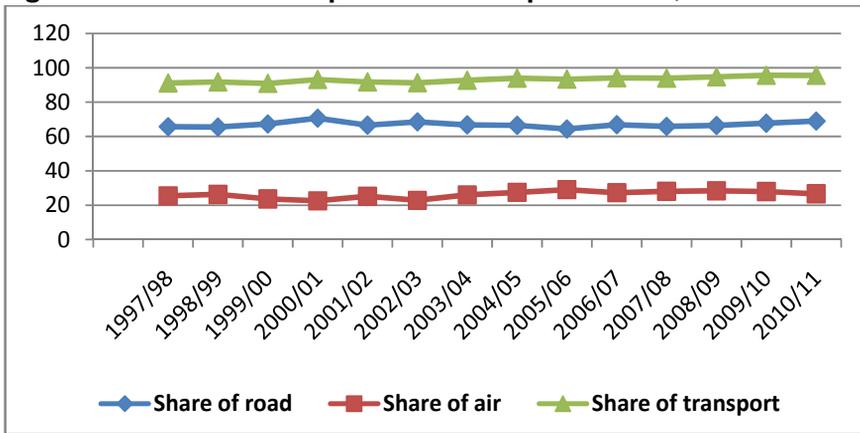
Ethiopia's consumption of fuel has been increasing from time to time. The share of transport sector consumption in the total fuel import which was 91.2 percent in 1997/98 has increased to 95.6 percent in 2010/11. Road transport took two third of the share while the balance went to air transport. The fact that slightly less than 5 percent of the total imported fuel went to other

⁵⁹ Fossil fuel energy consumption (% of total), Fossil fuel comprises coal, oil, petroleum, and natural gas products. <http://data.worldbank.org/indicator/EG.USE.COMM.FO.ZS>.

sources shows that the non-transport sectors depend mainly on non-fuel sources of energy such as electricity.

The primary concern of foreign exchange regime of Ethiopia is ensuring the availability of foreign exchange for essential commodities import such as petroleum, fertilizer pharmaceuticals, basic chemicals, etc. Since the country cannot go without having these essential commodities, priority will be given to them. The problem is that the amount of foreign exchange the country generates cannot go beyond covering these essential commodities thereby affecting the growth of the economy which would have been materialized by importing capital goods and technology.

Figure 10.1: Fuel Consumption⁶⁰ in Transport Sector, Share in %

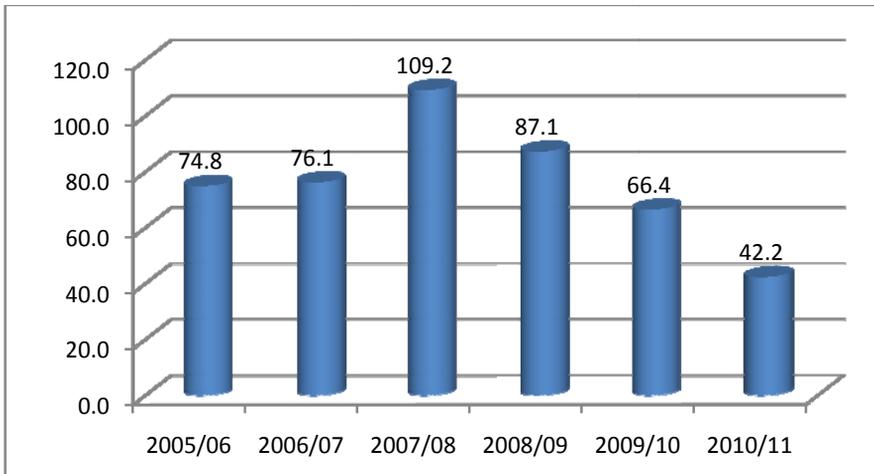


Source: Ethiopian Petroleum Enterprise (EPE)

⁶⁰ NB: So far, the country has not been importing any kind of petroleum products for its ships by Ethiopian Petroleum Enterprise (EPE). However, we can estimate (even though it becomes most generic) it by excluding those petroleum products which are used in other industries for various purposes. Accordingly, the amount of imported HFO, LFO and LPG which are highly used in cement plants; small factories such as pulp and paper, soft drinks and glass; and at household level for energy supply, respectively, are excluded for our purpose.

Here under attempt is made to see the fuel financing capacity of the merchandize export receipts of the country. Ethiopia spends substantial amount of foreign exchange to import petroleum. For instance, the fuel import bill of the country amounts to US Dollars 1.1 billion in 2010/11. At times, in 2007/08 for instance, the foreign exchange receipt from the total merchandize exports fall short of covering fuel import bill. Since then, however, the share of fuel import bill to the total merchandize export earnings has started declining rapidly, mainly due to increased export earnings of the country (Figure 10.2).

Figure 10.2: Value of Fuel /total merchandize export receipts, share in %



Source: NBE and Ethiopian Petroleum Enterprise (EPE)

According to the World Bank (2009)⁶¹, the road sector gasoline fuel consumption per capita of Ethiopia, Bangladesh, Nepal, and DRC were the

⁶¹ Road sector gasoline fuel consumption per capita (kg of oil equivalent) , <http://data.worldbank.org/indicator/IS.ROD.SGAS.PC>

lowest in the world each registering about 2 kg of oil equivalent while USA was the highest consuming about 1,134 kg of oil equivalent.

In order to minimize the transport sector's dependence on fossil fuel, an effort has been made to tune towards mixing Ethanol with benzene. Currently, 5 % ethanol is mixed with benzene and is mainly used in Addis Ababa fuel stations. Starting from 2011/12, the plan is to distribute to all fuel stations throughout the country. Private petroleum companies, such as NOC Ethiopia, have established large depots and processing factories for mixing petroleum with ethanol. This will help to reduce our dependency on imported petroleum. Since the 1970s oil crisis, Brazil had been using bio-diesel and ethanol for land transport; which has made it one of the leading countries in the world in this experiment.

10.2 Transport and Safety

Safety is critical in a transport system. The degree of safety that one will enjoy differs from one mode of transport to the other. Evidently, air transport is considered as the safest mode of transport while the road transport is the least safe.

According to the World Bank⁶², every year more than 1.17 million people die in road crashes around the world, of which about 70 percent occur in developing countries. Sixty-five percent of deaths involve pedestrians, out of which 35 percent of pedestrian deaths are children. Over 10 million are crippled or injured each year. It has been estimated that at least 6 million more will die and 60 million will be injured during the next 10 years in developing countries unless urgent action is taken. The majority of road crash

⁶² World Bank. Road Safety, <http://www.worldbank.org/transport/roads/safety.htm> accessed June 20, 2012

victims (injuries and fatalities) in developing countries are not the motorized vehicle occupants, but pedestrians, motorcyclists, bicyclists and non-motorized vehicles (NMV) occupants. The Global Burden of Disease study undertaken by the World Health Organization (WHO), Harvard University and the World Bank showed that in 1990, traffic crashes were assessed to be the world's ninth most important health problem by the year 2020 it would move up to third place in the table of leading causes of death and disability facing the world community.

According to World Bank⁶³, Ethiopia had 3 vehicles per 1000 population just next to Bangladesh, Togo and Sao Tome and Principe each had 2 vehicles per 1000 populations. Despite the low per capita vehicle ownership, the country's accident record is very high.

When it comes to traffic accidents, road traffic problem is the most frequently occurring problem compared to other transport modes, such as air, rail or water transport. Ethiopian Airlines has very astonishing record in safety and security except in some rare cases, such as the Beirut crash (the cause not yet identified), the Comoros islands and the Bahir Dar accidents, which can be mentioned as special situations (of high jacking or bird flocks) (ECAA). The rail and water transport sub-sectors have little or no record of traffic accidents.

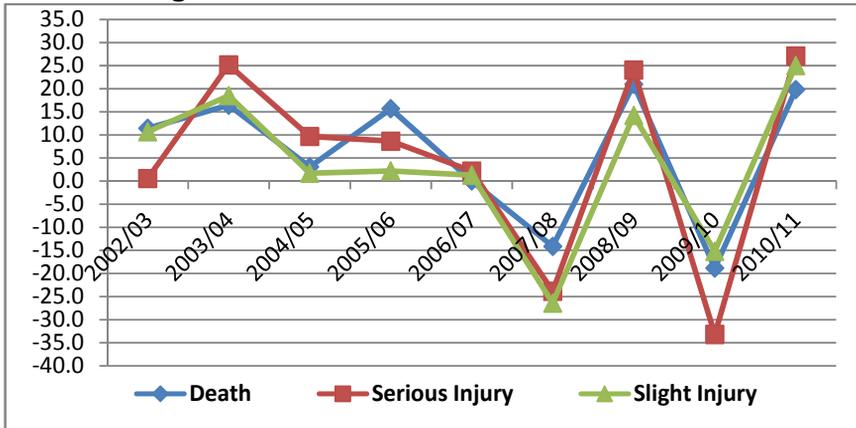
The traffic accidents in Ethiopia have been growing overtime, except the two years 2007/08 and 2009/10⁶⁴. The registered growth is less than the actual incidence since a number of cases passed unreported, especially when it involves minor injuries. The number of deaths has been increasing, the

⁶³ World Bank database,

⁶⁴ The 2009/10 data does not include Gambella regions accident. The 2010/11 data does not include Gambella and Harari regions.

numbers of serious and slight injuries have been increasing, on average, by 6 percent 4.5 percent and 3.6 percent, respectively in the period 2002/03-2010/11. All the three effects of a traffic accident have been trending together due to their simultaneous occurrence (Figure 10.3).

Figure 10.3: Traffic Accidents in Ethiopia, Victims by type of Injury, growth in %



Source: Federal Police Commission

Regionally within Ethiopia, the data seems to show that accidents are proportional to the number of vehicles operating in each region. Of the total vehicles registered in the country over half is estimated to be in Addis Ababa. As a result, greater share (about 53.7 percent) of the total traffic accidents are registered in the city. If not for data paucity, this report would have shown the accident per vehicle ratio for each region. Of the total traffic accident caused deaths in the country for 2008/09, Amhara, Oromia and Addis Ababa have accounted for 27.3 percent, 22.7 percent and 21.2 percent, respectively. This shows that Amhara has taken disproportionate share of the fatalities relative to its vehicles population (Table 10.1).

Table 10.1: Traffic accidents by region for the year 2008/09, Share in %

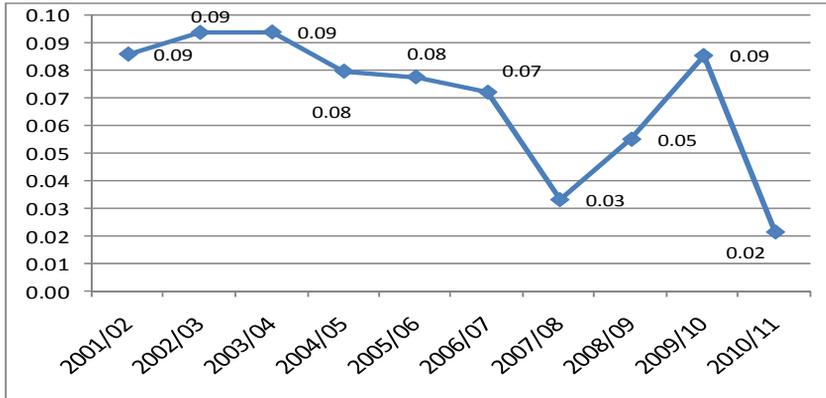
Regions	Death	Serious Injury	Slight Injury	Property Damage	Total
Tigray	8.42	8.55	6.71	4.73	6.03
Afar	2.73	1.28	0.81	1.14	1.31
Amhara	27.26	19.71	18.02	10.22	14.83
Oromia	22.71	14.74	17.72	8.91	12.73
Somalia	2.05	1.03	0.20	0.10	0.49
Benishangul-Gumuz	0.74	1.18	1.06	0.35	0.62
SNNP	10.87	8.26	11.61	0.91	4.74
Gambella	0.68	2.21	6.06	0.24	1.40
Harari	2.05	4.52	5.86	1.79	2.80
Addis Ababa	21.12	35.92	29.08	70.86	53.65
Dire Dawa	1.37	2.60	2.88	0.75	1.40
Total	100.00	100.00	100.00	100.00	100.00

Source: Federal Police Commission

Property damages caused by traffic accident are another concern for LDCs, like Ethiopia. The value of the property damage due to traffic accident has increased from Birr 56.96 million in 2001/02 to Birr 325.71 million in 2009/10 but has lowered to Birr 108.5 million in 2010/11. In terms of the percentage of GDP, it declined from 0.09 percent in 2001/02 to 0.03 percent in 2007/08 but rose again to 0.09 percent in 2009/10 again declined abruptly to 0.02 percent in 2010/11 (Figure 10.4).

The available data is presumed to be significantly under-stated due to the problem of getting the exact number of accidents occurring across the country. This, in turn, could be due to under-reporting; sheer absence of information; negligence; informal negotiations between victims and drivers; or absence of traffic police in accident sites at the time of the occurrence.

Figure 10.4: Traffic caused Property Damages, in % GDP



Source: Federal Police Commission

There are likely causes and consequences of road transport accidents in Ethiopia. Among the causes: poor driving-skills; disregard for priority-to-pedestrian rules on the road, driving in excess of speed-limits, utilization of freight vehicles for passengers, overloading in terms both of passengers and luggage, disregard for traffic rules and, poor technical/mechanical conditions and handling of vehicles; crowding of roadways by non-motorized vehicles (NMV), animals as well as pedestrians; low awareness of pedestrians about traffic rules and signs; weak traffic law enforcement; road quality and road engineering design problem, absence or lack of terminals, and parking problems.

Accidents have a number of adverse consequences, the major being death, serious injuries and property damages. This in turn have repercussion effect on the socioeconomic development of the country. Since most of the victims of traffic accidents are in their productive age range, as bread winners for their families. It is of such work-force that road traffic accidents deprive not only families but the country as well. Road traffic accidents impose a heavy

burden on the health-service sector as well. Although most accident victims are from the lower socio-economic strata and cannot afford to seek health services, hospitals are still stretched to the limit such that they cannot cope with the growing problem of traffic accidents. For instance, a 9-month survey undertaken in 6 major Addis Ababa hospitals shows that road traffic injuries accounted for more than 41% of the injury cases. This is, however, just the tip of the iceberg, since not all the cases or their causes have been reported.

10.3 Transport and Environment

The main impact of urbanization has been the expansion of urban land use. Such large cities obviously cannot be supported without a vast and complex transport system. Also, modal choice have an important impact on land consumption. The preference for road transportation has led to a massive consumption of space with 1.5 to 2.0% of the world's total land surface devoted to the automobile, mainly for roads and parking lots. The dependence on transportation has reached a point where 30 to 60% of urban areas are taken by road transportation infrastructure alone. In more extreme cases of dependency on road transportation, such as Los Angeles, this figure can reach 70%. With urbanization, the expansion of transportation has allowed the reclamation of vast amounts of land from rural activities towards other usage. Also, the duplication and generalization of infrastructure, public and private alike, have resulted in supplementary land requirements. This is notably the case for large transport terminals such as ports and airports where several were built because they belonged to different administrative jurisdictions (Jean-Paul Rodrigue, 2009).

The spatial location of activities like residence, work, shopping, production and consumption give some indications on the required travel demand and average distances between activities. With a tendency towards specialized

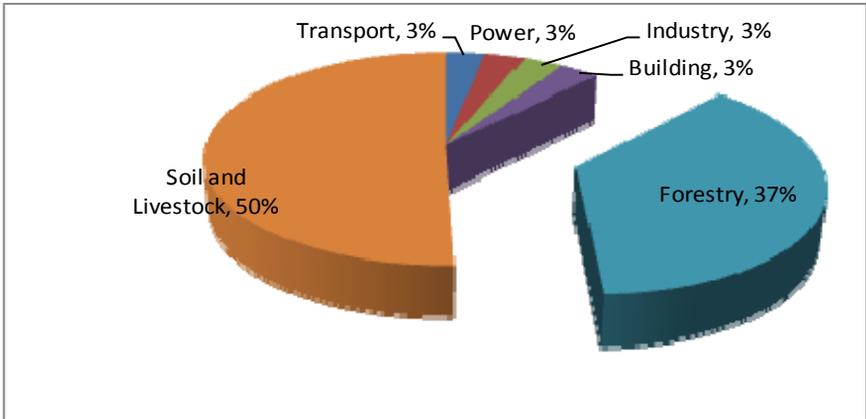
land use functions and thus a spatial segregation between economic activities, interactions are proportionally increasing. It is over the matter of density that the relationships between transportation, land use and the environment can be the most succinctly expressed. The higher the level of density, the lower the level of energy consumption per capita and the relative environmental impacts. In recent decades, the average density of several large metropolitan areas has declined by at least 25% implying additional transport requirement to support growing mobility demands often related to lower densities. Further, residence / work separation is becoming more acute as well as the average commuting distance (Jean-Paul Rodrigue, 2009).

The most obvious environmental cost is related to the quantity of land taken at the expense of the natural environment. It must also be considered that land use contributes to environmental degradation as a source of waste, particularly for industrial activities (air pollution, water pollution, hazardous materials, etc.). In several instances, the environmental externalities imposed by existing and emerging land use patterns impose significant economic, social and environmental costs that communities are less willing to assume. This has led to various land use regulations, mostly under the umbrella of "smart growth" initiatives. Higher energy prices are likely to shape urban development towards a dynamic that is more conventional and where distance decay plays an active role (Jean-Paul Rodrigue, 2009).

No significant work has been done in Ethiopia regarding the environmental impacts of transportation. According to the Climate Resilient Green Economy (CRGE) of the total GHGs emissions which is estimated at about 150 MT for the year 2010, the share of Soil and Livestock, Forestry, Transport, Power, Industry and Building are 50 percent, 37 percent, and each 3 percent respectively. This shows that transport plays minimal role in emitting GHGs into the atmosphere. Although the emission share is low, it is polluting by

disproportionate rate, compared with vehicle population, due to the poor quality of vehicles operating on the streets of the country (Figure 10.5).

Figure 10.5: Total GHG emissions⁶⁵ by Sector, for 2010



Source: Ethiopia’s Climate Resilient Green Economy (CRGE)

CO₂ emissions from transport (% of total fuel combustion), according to the world bank, the CO₂ emissions of Ethiopia in 2007 and 2008 is 58.4 and 56.7, respectively. CO₂ emissions from transport contain emissions from the combustion of fuel for all transport activity, regardless of the sector, except for international marine bunkers and international aviation.

⁶⁵ For the year 2010, according to the Climate Resilient Green Economy strategy document, the total GHG emission is estimated at 150 MT CO_{2e}.

Chapter Eleven

Summary and Recommendations

11.1 Summary

Transport has been playing critical role in the growth and development of Ethiopia. However, little research has been done on the sector. Cognizant of this fact, this study attempted to fill the research gap in the sector. It also documents developments in the sector and identifies issues for further research.

From the global perspective, the evolution of the development of the transport system has passed through five stages from the pre-industrial era to present age. In Ethiopia, all the four modes of modern transport system were introduced during the first half of the 20th century and have been evolving since then.

Currently, transport infrastructure development is found at a better state than ever before. For the last decade and so, a series of road sector development programs have been implemented. As a result, the road density in 1000 square km has increased from 24km in 1997 to 49.1 km in 2011 depicting more than 100 percent growth. In terms of population, road per 1000 people has improved from 0.49 km in 1997 to 0.66km in 2011 depicting 35 percent growth. Average distance to all weather roads has improved from 21km in 1997 to 10.2 km in 2011.

In fact, before the designing and implementation of GTP, the other modes of transport infrastructure such as railway and the service components of

transport sector have been neglected. Currently, however, all modes of transport, especially railway infrastructures development is getting greater attention. Of the total planned length of railway, over two thousand km railway will be constructed during the GTP implementation period. Of this, currently, the Addis Ababa-Mi'eso (317km) railway line construction has been underway since October 2011. In parallel, the Mi'eso-Dire Dawa-Dewale (339 km) single track electrified line is also under construction starting from December 2011. In addition, the construction of light rail transit service in Addis Ababa is underway.

Ethiopian export and import activities have been affected from their dependence on a single transit country, Djibouti. In order to reduce the transaction costs accruing in transit countries, constructions of dry ports were found indispensable. A number of dry ports have been planned to be constructed along the transit corridors. Among these, the constructions of Modjo and Samara dry ports have been completed and are in operation.

On improving the capacity of the airports operating in the country, investments have been made in the development of infrastructures since recently. These include investments in the construction of runways, terminals, and other construction and navigation facilities.

The transport sector has immense contribution to the national economy: employment, tax revenue and generation of foreign exchange. The share of transport sector in the total GDP has remained at more or less 4.2 percent over the last decade and half. The share of transport in the total service sector has, however, slightly declined from its level of 10.8 percent in 1996/97 to 9.5 percent in 2010/11 as a result of the relative higher growth of the other service sub-sectors.

The shares of road, water, air and others sub-sectors in the total value-added in the transport sector have been, on average, 50.1 percent, 5.5 percent, 37.4 percent and 7 percent respectively in 2010/11. Over the period 1996/97 to 2010/11, the share of road transport in the overall value-added by the transport sector has been declining while that of air transport has been increasing. The share of water transport has been increasing slightly over the period while the share of railway transport has been declining and even come to an end at the end of the review period.

In terms of the generation of employment, the contribution of the sector is insignificant accounting for less than 1 percent. Another contribution of the sector is government revenue. In this regard, however, data is largely absent. Here attempt is made to show the trends in revenue from imports of vehicles and accessories in the form of customs duty, excise tax and VAT. The total tax revenue from vehicle and accessories import has reached Birr 4.1 billion (22.7 percent of the total foreign trade taxes) in 2009/10.

Of the total service sector export receipts, the share of transport sector, which in effect is the share of air lines, is about 47.4 percent over the period 1996/97-2010/11. The share of transport has increased over time to reach 51.1 percent in 2010/11. Of the total service sector export receipts, the share of EAL, and ESL has been, on average, 95.0 percent, and 3.2 percent, respectively over the last decade.

A number of foreign and domestic investors have started engaging in the business of car assembly in the country. In the period 1997- March 2012, a total of 48 investors have obtained vehicle assembly investment licenses in the country, of which only 4 companies (8.3 percent) have gone operational.

Following the deregulation of air transport sector, private sectors have started participating in providing air transport services but with restrictions on passengers' seat capacity. According to the existing regulation, private air craft with 20 seat capacity and above are not allowed for private sector. As a result, only a few private air transport companies have been operational in the country competing with the giant EAL.

In general, it is difficult to obtain information on urban public transport for the major urban areas of the country. So as to give the picture of the transport problems in Addis Ababa, three small scale surveys were conducted in April 2012. According to the survey, the average waiting time for bus/taxi in bus/taxi stops is found to be 7 minutes and 23 seconds. The waiting time, however, ranges from 0 (during slack period) to 50 minutes (during rush hours). One of the major problems that aggravate the waiting time during the rush hour is the refusal of taxi operators to serve long-distance passengers. According to the survey, the total cost of the delays of passengers from their workplace is estimated at Birr 274.1 thousand per day in lost working hours in Addis Ababa.

The traffic congestion varies from place to place in the city. According to the survey, the most problematic areas in the city in terms of traffic congestion are Merkato, Mexico, La gare, Kera and Piazza. This is mainly due to narrow streets, parking of cars to both sides of the roads, frequent and unregulated crossing of streets by pedestrians, sharing of the roads with animal and human driven carts, large number of vehicles relative to the capacity of roads, narrow junctions without cross-over, and lack of traffic lights.

The review of documents indicates that Ethiopia does not have transport sector policy, which is crucial in guiding the overall development of the sector. There has been, however, various transport sector and sub-sector development strategies and programs (mainly focusing on road infrastructure

expansion) under implementation for more than a decade. In a nutshell, the focus of these implemented strategies and programs has been on the development of infrastructure neglecting the transport services and railways and air ports development activities. With the introduction of GTP, however, the neglected sub-sectors and transport service have obtained the government's due attention and are currently in their construction phases.

Access to transport infrastructure and transport services has been proved to influence the cropping choice of farmers. According to the survey, higher access and lower cost of transport services are found to have helped the poor to get access to input and output markets and hence increases their productivity. A better access to markets would change households' pattern of cropping choices in such a way that they choose crops that have higher demands in the market with better returns.

Manufacturing industries can be located in a particular locality for variety of reasons. According to the survey, the major location decision of industries were proximity to market, proximity to raw materials, availability of transport and access to skilled labor, in order of importance.

One of the factors explaining the low competitiveness of the industrial sector of the country is the poor transport infrastructure and services reflected in high transport cost and delayed delivery. The cost of transport in the overall cost of production of an industry is, estimated, on average, at 8.7 percent. The cost share, however, ranges from a less than 1 percent for some sub-sector to 24 percent to the other thereby indicating the diversities of industries in their transport service demand.

The survey also shows the average cost of transportation of a typical worker in the manufacturing industry. According to the finding, on average, a worker

in the sector spends Birr 154 per month on transport services for the trip between home and workplace. This is about 13.8 percent of the average monthly wage and salary (Birr 1,121) in the sector. This proportionately high transport expenses tend to force workers to cut their spending on other component of their consumption basket, mainly food.

According to the findings of the survey conducted on the value chain, the transport cost margin in coffee export is found to be less than 5 percent of its FOB price as of May 2012. This is mainly because coffee has high value to weight ratio. The estimate does not include the maritime transport and insurance costs which constitutes a significant amount of total transport costs of internationally traded commodities. In addition, it does not include the various transaction costs related to transporting the commodity such as port handling and custom clearance costs.

Transport sector is entirely reliant upon petroleum with the exception of railway transport, which uses electrical power. In Ethiopia, the share of fuel consumption by transport sector has been increasing from time to time. The share of fuel in transport to total fuel import has increased from 91.2 percent in 1997/98 to 95.6 percent in 2010/11 leaving only less than 5 percent for other sectors. In order to reduce the country's dependency on imported fuel, blending of benzene with ethanol has been undertaken.

Safety is crucial for transport system. According to World Bank, Ethiopia had 3 vehicles per 1000 population just next to Bangladesh, Togo and Sao Tome and Principe which had 2 vehicles per thousand populations in 2007. Despite the low per capita vehicle ownership, the country's accident record is very high. The number of deaths, serious and slight injuries has been increasing, on average, by 6 percent 4.5 percent and 3.6 percent, respectively in the period 2002/03-2010/11. The accident size is estimated to be less than the actual

accident in the country since a number of cases are unreported, especially when it involves minor injuries.

The likely causes of road transport accidents in Ethiopia include, poor driving-skills; disregard for priority-to-pedestrian rules on the road, driving in excess of speed-limits, utilization of freight vehicles for passengers, overloading in terms both of passengers and luggage, disregard for traffic rules and, poor technical/mechanical conditions and handling of vehicles; crowding of roadways by non-motorized vehicles (NMV), animals as well as pedestrians; low awareness of pedestrians about traffic rules and signs; weak traffic law enforcement; road quality and road engineering design problems, absence or lack of terminals, and parking lots.

Of the adverse consequences of traffic accidents in the country, the major ones are deaths, serious injuries and property damages. Since most of the victims are people in the productive age group, it causes unfortunate loss of bread winners of families. It also imposes a heavy burden on the health-service sector as well. Most victims are the poor and they cannot afford to seek health services. Road traffic injuries account for more than 41% of the causes of injuries treated by different hospitals across the country.

Nowadays, the environmental impacts of transportation are getting attention. According to the Climate Resilient Green Economy (CRGE) of the total GHGs emissions which is estimated at about 150 MT for the year 2010, the share of soil and livestock, forest, transport, power, industry and building are 50 percent, 37 percent, and each 3 percent respectively. This shows that transport plays minimal role in emitting GHGs into the atmosphere. Although the emission share is low, it is polluting by disproportionate rate, in relative to the number of vehicles of the country due to the poor quality of vehicles operating on the streets.

11.2 Recommendations

Having assessed the current state of the sector, the following recommendations are suggested:

- According to the assessment made by this study, little research has been done on the sector. Despite its vital role for the development of the country, it is one of the least researched sectors. Therefore, it would be imperative for the academia, students and researchers to take up transport and related issues as their research agenda. Future researches in the area would definitely add ample value for the development of the sector.
- Among the impediments that this study has faced, lack of detailed information on the sector is the major one. It was difficult to obtain information on the various transport and related variables such as the number of registered vehicles, number of passengers carried by road transport, size of freight carried by road transport, revenue generated by the sector, and other variable at various administration levels. Hence, the responsible public body may organize database both at national and regional level and make it available for researchers.
- Modes of transport are specialized in terms of distance, topography, volume and nature of commodities, and size of the population. Efficiency, relevance, and positive impact of transport projects require considerations of such specialized nature of modes of transport so that modes of transport would not be redundant.
- The relatively high transport costs in the total cost of production of firms have been reducing the competitiveness of the economy. Hence, it might be to the advantage of the economy to take measures to help reduce the costs of transport services in the production process.

- There have been various inefficiencies in the sector. For example, export commodity transporting trucks return empty from Djibouti and import goods transporting trucks go empty to Djibouti despite the presence of two way traffic. This happens mainly due to lack of information. Hence, it is important to establish freight transport information centers which provide freight (dry cargo) information to transporters, importers and exporters to and from the ports. If trucks start transporting both ways (this is possible except under special circumstances), the total exports and imports could well be handled by half of the exiting stock of functional trucks. This, in turn, will help improve efficiency by reducing the total fuel consumption, opportunity cost of time, depreciation of vehicles, and other costs.
- The supply of the transport service is in short of the demand for it. This is mainly due to the low attractiveness of the sector in terms of return compared with other sectors. Hence, government has to provide attractive incentives to encourage private sector to expand their engagement in the sector.
- Lack of parking lots has been affecting the smooth flow of traffic in the streets of Addis Ababa since vehicles use one or two of the lanes for parking. Hence, the municipality may ensure the existence of sufficient underground parking facilities in the design of large buildings before the municipalities issue construction permit.
- The problem of parking lots could also be addressed through providing incentives for investors willing to involve in parking lot businesses. Large plots of land at different location of the cities can be developed by the private and/or the public sector for dual purposes of parking lots and recreation centers. While the

underground could be developed for parking facility, the upper space might be used to ease the serious shortage of public space.

- Traffic congestion has started being the problem of Addis Ababa since recently, especially during the rush hours. To address these problems, survey results suggest the following recommendations:
 - Prepare proper parking lots in the different part of the city and prohibit the parking of cars on both sides of narrow streets.
 - Prohibit animal transport and human pooled carts from the streets of the city, especially the centers of the city.
 - Expand existing and construct new pedestrian walk ways.
 - Construct alternative ways in some areas by upgrading the existing linking roads by building bridges.
 - Construct fly over bridges over some critical square such as Mexico and Diaspora squares.
 - Ensure all time presence of traffic polices, especially in the most congested areas of the city since the majority of drivers tend to breach traffic laws when the traffic polices are not in place.
 - Install traffic lights at least at major junctions. The traffic lights would be more effective if they were to include digital signals for pedestrians.

- Transport sector development without proper guiding policy will give rise to undesirable outcomes in the long run. Hence, government may speed-up the preparation of transport sector policy and put to effect.

- Survey findings show that availability of transport infrastructure and services have detrimental role in influencing the decision to locate industries, choose rural economic activities including what crops to

produce. Hence, transport infrastructure and services may target major growth corridors with potential resources for industries, and cash crop production.

- Despite the need to move towards greener sources of energy, the dependency of the country on imported fossil fuel has been increasing from time to time. Hence, the blending of fuel with ethanol may continue and green energy using vehicles might be encouraged through various tax and non-tax incentives.
- Since it is customary to witness informal payments by those in breach of traffic laws to enforcing bodies, the ideal solution to drastically reduce violation of traffic laws is through installing camera based control system along the streets, making use of technologies such as geographical information systems (GIS) especially in high traffic accident prone areas. In addition, a national Road Safety Plan might be prepared and implemented.
- The environmental effects of the transport sector of the country were not studied in depth. Thus, the environmental effects of the sector might be assessed; and ways in which environmentally friendly means of transport be expanded in the country might be identified.
- It is also imperative to draw lessons from a successful transport sector management system and replicate in Ethiopia.

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Annexes

Table: 4.1: Manufacturing Exports share in total Sales of the sub-sector and total Manufactures Exports

No.	Sub-sectors	Share within (in %)					Share in total export					PASDEP period average			
		SDPRP last year, 2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	SDPRP last year, 2004/05	2005/06	2006/07	2007/08		2008/09	2009/10	
1	Food Products and Beverages	6.9	11.6	4.0	3.1	2.5	1.8	4.6	30.3	46.7	25.4	20.0	25.3	23.4	28.2
2	Textiles	9.0	10.5	11.1	14.1	12.4	9.2	11.4	7.9	7.4	12.9	7.1	12.4	15.8	11.1
3	Wearing Apparel, Except Fur Apparel	0.3	1.1	17.0	26.1	8.4	12.9	13.1	0.0	0.1	4.8	7.1	2.9	7.4	4.4
4	Tanning , Dressing , Footwear, Luggage and Handbags	64.0	60.1	41.5	61.3	52.9	36.3	50.4	61.4	44.6	54.3	63.1	56.5	41.9	52.1
5	Sub-total(5=1+2+3+4)	15.8	17.8	10.7	11.9	7.8	60.2	21.7	99.7	98.7	97.4	97.4	97.1	88.5	95.8
6	Manufacture of Tobacco Products	0.0		0.0	0.3	0.3	0.4	0.3	0.0		0.0	0.1	0.1	0.4	0.2

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7	Wood and of products of wood , furniture	0.0		0.8		0.7	0.1	0.5	0.0		0.3		0.5	0.0	0.3
8	Paper, Paper Products and Printing	0.0			0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.1	0.0	0.0
9	Chemicals and Chemical Products	0.0		1.5	1.6	0.9	1.0	1.3	0.0		1.9	2.0	1.7	3.0	2.1
10	Rubber and plastic Products	0.1		0.1		0.2	0.1	0.1	0.1		0.1		0.3	0.3	0.2
11	Other non-metallic Mineral products	0.1	0.8	0.1	0.1	0.0	0.1	0.2	0.1	1.1	0.2	0.3	0.0	0.2	0.4
12	Manufacture of Basic Iron and steel	0.0	0.0		0.0	0.1	2.4	0.6	0.0	0.0	0.0	0.0	0.1	3.2	0.7
13	Fabricated Metal products, Machinery and equipment	0.0	0.0	0.0	0.0	0.0	3.6	0.7	0.0	0.0	0.0	0.0	0.0	4.4	0.9
14	Motor vehicles, trailers and semi trailers					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Total	8.4	9.1	5.1	6.1	4.1	3.0	5.5	100.0						

Source: CSA and own Computation

Annex 9.1: Multinomial Logistic Regression

Multinomial Logistic regression			Number of Observations		
Log likelihood			-1004.2	LR chi2(36)	726
Wald Test (Cost of Transport): chi2(9)			39.4	Prob.>chi2	244.8
Prob.>chi2			0.0000	Pseudo R2	0.000
Crops	Variables^{1,2}	Coef.	St. Err	Z	P> z
Pepper	Cost of Transport	-0.35	0.11	-3.36	0.00
	Crop is Insured (Yes=1)	15.29	1959	0.01	0.99
	Plot is Irrigated (Yes=1)	-14.24	4463	0.00	1.00
	Level of Education of Farmer	-0.64	0.41	-1.57	0.12
	Constant Term	-31.20	3918	-0.01	0.99
Lentils	Cost of Transport	-0.14	0.09	-1.60	0.11
	Crop is Insured (Yes=1)	15.43	1846	0.01	0.99
	Plot is Irrigated (Yes=1)	-14.48	3882	0.00	1.00
	Level of Education of Farmer	-0.13	0.33	-0.38	0.70
	Constant Term	-32.56	3693	-0.01	0.99
Coffee	Cost of Transport	-0.08	0.12	-0.64	0.52
	Crop is Insured (Yes=1)	-5.21	0.80	-6.55	0.00
	Plot is Irrigated (Yes=1)	0.67	1.21	0.56	0.58
	Level of Education of Farmer	0.63	0.42	1.49	0.14
	Constant Term	4.79	1.31	3.67	0.00
Chat	Cost of Transport	-0.42	0.10	-4.38	0.00
	Crop is Insured (Yes=1)	-3.16	0.42	-7.43	0.00
	Plot is Irrigated (Yes=1)	0.87	1.12	0.77	0.44
	Level of Education of Farmer	0.55	0.28	1.93	0.05
	Constant Term	4.62	0.92	5.01	0.00
Enset	Cost of Transport	-0.18	0.07	-2.56	0.01
	Crop is Insured (Yes=1)	-1.42	0.46	-3.08	0.00
	Plot is Irrigated (Yes=1)	-15.30	2597	-0.01	1.00
	Level of Education of Farmer	0.63	0.22	2.88	0.00
	Constant Term	0.84	0.98	0.86	0.39
potatoes	Cost of Transport	-0.06	0.10	-0.55	0.58
	Crop is Insured (Yes=1)	15.33	2000	0.01	0.99
	Plot is Irrigated (Yes=1)	-14.04	4424	0.00	1.00
	Level of Education of Farmer	1.04	0.25	4.14	0.00
	Constant Term	-34.34	4001	-0.01	0.99

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Chickpeas	Cost of Transport	-0.04	0.09	-0.48	0.63
	Crop is Insured (Yes=1)	15.47	1980	0.01	0.99
	Plot is Irrigated (Yes=1)	-14.52	4118	0.00	1.00
	Level of Education of Farmer	0.10	0.34	0.30	0.76
	Constant Term	-33.47	3960	-0.01	0.99
Fenugreek	Cost of Transport	-0.15	0.14	-1.07	0.29
	Crop is Insured (Yes=1)	15.41	3058	0.01	1.00
	Plot is Irrigated (Yes=1)	-14.34	6475	0.00	1.00
	Level of Education of Farmer	0.23	0.49	0.46	0.65
	Constant Term	-33.82	6117	-0.01	1.00
Beans	Cost of Transport	-0.22	0.07	-3.25	0.00
	Crop is Insured (Yes=1)	15.37	1366	0.01	0.99
	Plot is Irrigated (Yes=1)	-14.28	2939	0.00	1.00
	Level of Education of Farmer	0.07	0.25	0.29	0.77
	Constant Term	-31.68	2733	-0.01	0.99

1. Other household and plot and household characteristics and woreda dummies are omitted in the above report to save space.

2. The base group is cereals as a group (teff, barley, wheat, oat, maize)

Annex 9.2: First Major Reasons Locating Manufacturing Industries, by Type of Industry

Type of factory	Proximity to market	Availability of transport	Existence of similar factories	Expectation of changes	Favorable access to land	Access to unskilled labor	Access to skilled labor	Access to raw materials	Total
Food and beverages	9 33.3%	4 14.8%	4 14.8%	1 3.7%	2 7.4%	0 .0%	2 7.4%	5 18.5%	27 100.0%
Tanning & dressing of leather; footwear, luggage & handbags	0 .0%	1 50.0%	0 .0%	0 .0%	0 .0%	0 .0%	1 50.0%	0 .0%	2 100.0%
Wood & of products of wood & cork, except furniture	1 12.5%	0 .0%	0 .0%	1 12.5%	0 .0%	0 .0%	2 25.0%	4 50.0%	8 100.0%
Paper, paper products and printing	1 33.3%	1 33.3%	0 .0%	0 .0%	0 .0%	0 .0%	1 33.3%	0 .0%	3 100.0%
Chemicals and chemical products	1 33.3%	0 .0%	0 .0%	1 33.3%	0 .0%	0 .0%	1 33.3%	0 .0%	3 100.0%
Rubber and plastic products	2 28.6%	1 14.3%	2 28.6%	0 .0%	0 .0%	0 .0%	1 14.3%	1 14.3%	7 100.0%
Other non-metallic mineral products	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	2 100.0%	0 .0%	2 100.0%
Basic iron and steel	0 .0%	0 .0%	0 .0%	0 .0%	2 33.3%	1 16.7%	1 16.7%	2 33.3%	6 100.0%
Fabricated metal products except machinery and equipment	5 71.4%	2 28.6%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	7 100.0%
Machinery and equipment n.e.c	1 100.0%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	0 .0%	1 100.0%
Furniture	1	0	0	0	0	0	0	0	1

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	100.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Others	1	0	0	0	0	0	0	0	1
	100.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Thread	0	1	0	0	0	0	0	0	1
	.0%	100.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Tiles	0	0	1	0	0	0	0	0	1
	.0%	.0%	100.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Tobacco	1	0	0	0	0	0	0	0	1
	100.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Pipe	0	1	0	0	0	0	0	0	1
	.0%	100.0%	.0%	.0%	.0%	.0%	.0%	.0%	100.0%
Total	23	11	7	3	4	1	11	12	72
	31.9%	15.3%	9.7%	4.2%	5.6%	1.4%	15.3%	16.7%	100.0%

Source: EEA/EEPRI Transport Survey, March 2012

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