ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

ROAD FREIGHT TRANSPORT IN ETHIOPIA WITH SPECIAL EMPHASIS ON ADDIS ABABA – DJIBOUTI CORRIDOR

BY
ASNAKE TADESSE

JUNE, 2006
ADDIS ABABA

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

ROAD FREIGHT TRANSPORT IN ETHIOPIA
WITH SPECIAL EMPHASIS
ON
ADDIS ABABA – DJIBOUTI CORRIDOR

A THESIS SUBMITTED TO
THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTERS OF ARTS
IN REGIONAL AND LOCAL DEVELOPMENT STUDIES

BY: ASNAKE TADESSE
(RLDS)

APPROVED BY BOARD OF EXAMINERS

_____	_____
CHAIRPERSON	SIGNATURE
_____	_____
ADVISOR	SIGNATURE
_____	_____
EXTERNAL EXAMINER	SIGNATURE
_____ ___	_____
INTERNAL EXAMINER	SIGNATURE

SIGNED DECLARATION

This thesis is my original work and all sources of materials used for the thesis have been duly acknowledged.

_____

ASNAKE TADESSE

Addis Ababa University

June, 2006

The Thesis has been submitted for examination with my approval as an advisor

_____

Bekure Wolde Semayit (PHD)

AKNOLWDGEMENT

Many people have generously cooperated and contributed for the success and completion of this thesis. My special thanks, first and foremost, goes to Dr. Bekure Woldsemayit, my thesis supervisor. In his capacity as my advisor, Dr. Bekure, whose work ethic is worth modeling, closely followed my progress corrected and improved the manuscript with valuable comments. I would not hesitate to state that the merit that is in this paper is on account of the supervision of my advisor. I am deeply grateful for the encouragement and help offered by him.

I would also like to thank my family. My wife W/ro Elzabeth Misale deserves special thanks for her continued encouragement without her patience and timeless assistance, much less would have been possible. My heartfelt thanks goes to Ato Atanafseged Kifle of RTA for his assistance, encouragement and cooperation and friendship.

I extend my thanks to W/ro Tirsit Teferi, W/ro Senait Moges and W/t Asemash Kassa, our secretaries, who typed the manuscript and made sure that the thesis was ready on time.

ASNAKE TADESSE

JUNE 30, 2006

Table of Contents

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

CHAPTER SIX

List of Tables

List of Acronyms

ADLI	Agricultural Development Led Industrialization
COMESA	Common Market for East and South Africa
CSA	Central Statistics Agency
ECOWAS	Economic Community of West African States
ECA	Economic Commission for Africa
ECA	Ethiopian Customs Authority
EFTC	Ethiopian Freight Transport Corporation
EPTC	Ethiopian Public Transport Corporation
ERA	Ethiopian Road Agency
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
IHA	Imperial Highway Authority
MOET	Ministry of Equipment and Transport
MOFED	Ministry of Finance and Economic Development
MOI	Ministry of Infrastructure
MOTAC	Ministry of Transport and Communication
NBE	National Bank of Ethiopia
PDRE	Peoples Democratic Republic of Ethiopia
RRA	Regional road Authority
RSDP	Road Sector Development Programme
RTA	Road Transport Agency
RTCB	Road Transport and Communication Bureau
SADC	Southern Africa Development community
SIDA	Swedish International Development Agency
SNNPR	Southern Nations Nationalities and Peoples Region
SSATP	Sub Saharan Africa Transport Programme
UNECA	United Nations Economic Commission for Africa

USAID	United States Aid for International Development
WB	World Bank
WBI	World Bank Institute

Definition of Key words

Link road	-Roads connecting different nodes
Load Factor	-the volume of commodities transported as related to the capacity that can be performed in a given time
Main Access roads	-Roads under the Federal Road Agency
Semi-trailer	-a vehicle constructed for use and used for carrying goods and being drawn by vehicle, and so constructed that some part of its weight and that its load rests upon or is carried by another vehicle
Trailer	-a vehicle which has not independent motive power and which is capable of being attached to and drawn by motor vehicle
Transport performance	-the realized (transported) volume of commodities out of the total transport demand
Truck	-a motor vehicle constructed for use and used primarily for the conveyance of goods of any description
Truck Tractor	-a motor vehicle constructed used primarily for drawing other vehicles and so constructed as to carry no load other than a part of the weight of the vehicle and load being drawn
Trunk road	-an important main road

ABSTRACT

Ethiopia, with an estimated population of 75 million and an area of about 1.14 million square km, is one of the largest countries in Africa.

In Ethiopia, as in many other developing countries the road infrastructure and the freight transport vehicles in terms of size, age and capacity, are not sufficient to support the growth in the economic activities. With economic growth, the demand for freight transport soared and consequently shortages and congestion problems surfaced.

The objective of this study is to give an overall view in the development of road freight transport with respect to current and future expectations. The basis for embarking on this study is to present the features of the road freight transport and its development treads. So as to enable the stakeholders, both in public and private, be fully aware and make decisions on policy, operation and investment.

One of the findings of the study is the limited Road Network extension. Though road freight transport is recognized as the backbone for the economic development of Ethiopia, assuring more than 90% of freight movement, it appears to be still not respondent to the demands because of infrastructure conditions. Transit roads from ports and internal transport infrastructure are very limited in extension and can serve only a part of the country.

Another finding of the study is that the commercial road freight transport is performing under difficult conditions due to vehicular and regulatory problems. Though the average growth of registered vehicles in the last fifteen years has been about 5%, the fleet is quite small for the size and population of Ethiopia. Among the total dry cargo vehicles size 74.35% constitute vehicles with off-take capacity less than 12 tons. The stock of freight transport vehicles have an average age well over 15 years and suffer from old age. Also, dry cargo freight transport industry is dominated by three concentrations of commercial transport operators (parastatals and associates, association, share companies), which tend to protect their market share. The role of foreign capital investment in the dry cargo freight transport sector is extremely restricted.

In view of future expectation it is observed that commodity movement will increase in volume. The growth of commercial road freight transport performance in the projection years seems to mismatch the growth in the economic performance.

The results of the findings were used to suggest areas for further policy implications and area of investments. The government should now consider the policy and regulatory frameworks and give greater priority to investment in road infrastructure. At the same time it should consider giving the private sector the chance to highly participate in the transport industry to fill the gap.

CHAPTER ONE

Introduction

Transport has a necessary role to play for Economic growth and Social development of a country. The existence of transport infrastructure in general and road transport in particular is very crucial to any nation's economic and social de

The Road transport sector plays a role of outstanding importance in any national economy, both through its own direct contribution to GDP and employment as well as through the provision of services which are indispensable for the development of all other economic sectors. They comprise urban, national regional and international import, export and transit flows of goods and passengers.

It is true that improved transport is basic to the development in social, political and economic fields. The corner stone of any market based economy is an efficient system for supplying production and business inputs and distributing outputs. The movement of any economy to a higher level is dependent on making more efficient use of transport facilities (Tefera and Alemayehu, 1996:5).

Evidences testify to the fact that adequate and efficient physical infrastructure, in general and road transport in particular, is among the most essential inputs for poverty reduction via direct and indirect channels (Tassew and Walter, 2004:139).

In most developing economies like Ethiopia road transport is one of the most popular and important modes of transport. In the case of Ethiopia, the physical and economic features as well as economic status of the population, make road transport the most viable mode of transport, the country must give priority to develop its socio-economic infrastructure. At present Ethiopia has no option but to develop and improve the quality and accessibility of its road network.

Like other sub-Saharan African countries road transport is one of the dominant and most popular modes of transport system in Ethiopia. However, the present status of the road sector in Ethiopia is far from being satisfactory. High unit transport cost and low quality of services have contributed to stifled production and hampered the development of markets. The inadequate road network has not only resulted in high transport cost but also contributed to problems of accessibility to high agricultural potential areas. (Tefera and Alemayehu, 1996:10).

Prior to 1991 commercial road freight transport services in Ethiopia has been under strict government control and the operation excessively regulated by the government. The structure of the sector was centrally controlled and services were provided through only Ethiopian Freight Transp ort corporation (EFTC) (Atnafseged, Unpublished 2001). Deregulated road freight transport operations in post 1991, though ineffective, cover the whole country as well as international transport. By far the highest amount of national traffic is facilitated between the port of Djibouti and the capital Addis Ababa.

Road freight transport, hence, plays a significant role within the economic development of Ethiopia, in terms of national distribution of goods as well as facilitating international trade and transport relations.

1.1 Statement of the problem

Ethiopia with an estimated total population of about 75 million (2004/05) is the only land locked country in the horn of African region. About 95% of the Ethiopian cargo movements are transported through road freight transport services. In order to cater for the growing demand of freight transport in the movement of export, import and domestic cargo, it presupposes the availability of vehicles with lower age spectrum with high carrying capacity. (Atnafseged, unpublished 2001)

As road freight transport has a detrimental role in affecting positively or otherwise, the efficiency of the primary and secondary economic sectors that require input-output movements are very much dependent on this particular mode.

Despite better policy changes and operating environment, freight transport still suffers from the neglect observed in the years prior to 1991. Even in post 1991 with the incomplete privatization that was observed, complete deregulation and policy changes, investment for the development of freight transport industry in Ethiopia and observant to the demand for development in other economic sectors, seems to becoming much of a priority.

Notwithstanding to its significance on social and economic development road freight transport system in Ethiopia suffered stagnation in infrastructure development. The country, which is the third populous in Africa, has poor physical infrastructure development with, for example, possessing a road density of 0.5 Km per 1000 people as opposed to COMESA countries of 1.5 Km on an average (ERA, 2003).

Efforts to enhance development in this respect has been frustrated due to old age of vehicles, unmatched demand relative to fast development observed in other sectors. Vehicle utilization rate and carrying capacity is small. There is also external diseconomies by introducing inefficiencies and unreliability in the supply chain. These are indicative to requirements for more investment policy changes if the economy is to be revitalized.

1.2 Objective of the Study

The study is an attempt to give an overall view in the development of road freight transport with respect to historical, current and future expectations. It aims at providing an overview and back ground to the sectoral performance of the road freight transport economy with emphasis to future demands.

The basis for embarking on the study is to present the features of the road freight transport and its development trends so as to enable stakeholders, both in public and private, be fully aware of the changes and make decisions on policy, operation and investment.

The major objective is therefore:

- to survey or study the evolution of the road freight transport, and recommend policy implication and investment areas to the regulating agency and the private sector.

The specific objectives are:

- to describe performance trends of road freight transport.
- identify the vehicle stock age and capacity, Regulatory and Network problems affecting the performance of road freight transport.
- to indicate the role of privatization in the sector.
- to look at the transport demand and supply and indicate future prospects and put recommendations for future development of road freight transport.

1.3 Methodology and Source of Data

The nature of road freight transport study requires close scrutiny of factors that affect, limit, and determine the over all development of the industry. Such investigation requires a range of methodology to enable arrive to some reasonable conclusions.

1.3.1 Data Sources

In order to sufficiently display the road freight transport situation in the country, the methodology starts with identifying pertinent data sources. Attempt is to be made to collect extensive information from various institutional and individual sources.

The bulk of data collection is made from documentary sources, among which annual statistical bulletins of different institutions, field investigation mainly from weight stations and operation reports from different stakeholders involved in road freight transport business.

Most of the documentary sources and publications used for this study are publication of CSA, Reports of RTA, Annual Bulletins of MOI, Quarterly and Annual Bulletin of National Bank of Ethiopia and Reports of Customs Authority.

Records and information on internal traffic and commodity movements were collected from weight stations.

1.3.2 Data Analysis

Extensive literature review is made to maintain standard and consistency in the study. With the data provided and collected from field investigation, information provided from different relevant institutions, an in depth analysis shall be performed using, tables and ratio or percentage at different situation.

Forecasting approach is also used to predict commodity movements. It is apparent that there are elements to be considered in future commodity movement studies as these in turn influence the supply of freight transport vehicles.

To equip governments, institutions and companies with future estimates of commodity movement, choice has been made in using forecast for the purpose of this study.

To maintain consistency, variables used in future forecast are converted into similar measurement units (quintals into tons). Moreover data figures are converted into logarithmic values especially in the application of regression models. The regression analysis is based on time series data colleted from statistical publications of CSA, NBE Quarterly and Annual Bulletins, MOI Annual Statistical Bulletin, Ethiopian Customs Authority.

1.4 Significance of the study and limitations

Ethiopia is a relatively large and populous country in Africa, and is economically among the least developed in the world. The existence of transparent infrastructure in general and road transport in particular facilitates the economic development.

Hence, the findings of the study could serve as an important base for freight , planners and investors to make decision on policy and investment in the road freight transport industry.

The major limitation that can be encountered in carrying out the road freight transport study is availability and sufficiency of data on volume of transport, vehicle(fleet).

Besides, since the emphasis of the study is on AA- Djibouti corridor, the data is only on the receiving end, Ethiopia.

1.5 Organization of the Study

This study is organized around six chapters excluding the introductory chapter. In chapter II literature related to Road Transport and Development is reviewed. In chapter III Road Transport Network of Ethiopia is treated. In Chapter IV the stock (size) Age and Capacity of Freight Transport vehicles is discussed. In Chapter V, road Transport Policy and Regulation is discussed.. In Chapter VI, the Movement of Commodities, Demand and supply of Fright Transport is discussed. In Chapter VII, the author's conclusion indicating Policy Implication, Recommendation mainly on how the transit and domestic transport can be improved and investment encouraged to bridge the gap between transport demand and supply is given.

CHAPTER TWO

LITERATURE REVIEW

2.1 Transport and Development

A major concern in the past three or four decades has been the question of the development of nations with low levels of production and income. As a consequence, academics and governments have given much attention to the factors that enhance or retard development. One of the basic factors examined in this respect has been infrastructure, and especially its "hard core" elements, transport (Hirchman, 1958:83). Many people would agree that improved transportation plays a key role in economic development. This indeed is one of the few general truths which it is possible to derive from the study of economic history (Youngston 1967:73)

Transport is one of the basic ingredients in the operation of an economic system, as it is interwoven with numerous activities and facilities exchange and interaction. As far back the eighteenth century, Adam Smith noted the beneficial impact of transport on the economic performance and growth of nations. According to Smith (1977:251), transport stimulating agricultural production, low levels of regional inequality by opening up remote areas, and as a result induces better territorial integration.

In the framework of the stages of development theory forwarded by W.W. Rostow, the early provision of transport infrastructure was also considered as a prime factor for the realization of the economies of take-off into growth. (Haggets 1972:406). Other writers on the subject maintain similar views on the place of transportation in the progress of nations, when they indicate that the adequacy of transportation system is a satisfactory indicator of their level of development. As such the nature of the transport system its configuration and complexity bear closely on the development level attained.

Studies by Kansky (1963) and Owen (1965, 1985) have also shown that there is a direct association between indices of transport network development and mobility on the one hand and the stage of development on the other. An earlier examination of the patterns

of economic development of a wide spectrum of nations by Berry, found that low levels of transport development (in terms of rail and road) correspond with low levels of over all development (Berry, 1960: 91). Like wise a more recent analysis of the impact of road transport development on regional economic performance in Tanzania indicated that 25% of the regional variation in the levels of Gross Domestic Product was accounted for by variations in road density. (Hofmeir 1973: 94). On the bases of studies such as these, One could readily conclude that transportation's role in development is crucial. However, the views on the role of transport in development are not of an unqualified nature and this is indicated by the varying conclusions reached by workers in the field. It appears therefore that the exact impact of transport on development is not always known in a conclusive manner.

At one end of the spectrum, there are students who posited the view that transport had a prominent place in progress, i.e. the positive view. At the other end of the spectrum were those who argued that transport investments tie up and requires huge amount of capital and therefore syphon off scarce resources that could have been used profitably and productively in other activities (the negative items). Straddling these two extreme themes, the third view point is that transport sector is essentially a derived demand its main function being the removal of obstacles to the expansion of the other sectors (the middle case).

As is noted by Adler (1966:55), whether or not transport investments stimulates progress requires adequate knowledge of at least three questions, VIZ

I. Would economic development have been possible without investment in transport?
II. Would resources have been left idle in the absence of transport expansion
III. Did the activities that evolved due to expansion of transport replace other activities that would have possibly developed without its expansion.

Transport can influence progress directly and/or indirectly and investments in the sector have long lasting effects and have to be critically evaluated as a result. In this sense, it is perhaps informative to adopt a temporal perspective when studying the relationship between transport and development.

In the early phases of development, transport services play a positive role with development. A minimum (threshold) level of development is needed for the growth of an economy. To Hoyle (1973:55) transport assumed the important role of 'stimulating' growth in the early stages of development and an increasing facilitative role once development was underway. Peters (1982:9-10) also observes that '_ _ in the initial phase of development higher incidence of goods in relation to transport is characteristic', in countries mainly agricultural.

Though the issue of the place of transport in development is fraught with controversies, it appears that there is consensus on the significant role it has in the early stages of progress. In this sense, it should be clear that the sector has had and will continue to have considerable importance in the development of Ethiopia.

Transport constitutes a necessary ingredient for the operation, maintenance and expansion of industries, import/export services and agriculture. Thus, the nature and location of transport infrastructure will influence the locational attraction of regions. As this is, the case has been borne out by studies of the location and distribution of industries and towns in Ethiopia. Mulatu (1976) found out that over 50% of the industries in Ethiopia ranked transport as the single most important factor in the locational choice considerations. Alula (1982:17) also notes that road transportation has been one of the prime factors behind the genesis and growth of many towns in Ethiopia. Hence both Urbanization and industrialization have been substantially patterned by road transport. Regional patterns of agricultural production and rural income variations have similarly been positively associated with transport infrastructure in Ethiopia (Abraham, 1982).

Furthermore, transport system can have specific social and geographical effects on the location and distribution of other activities. For example, in a review of the principal attributes of transport, that render it instrumental as a regional development policy variable, Voigt (1979:10-13) identified major impulses of transport. One of the major spatial structure of effects of transport is what Voigt terms 'impact on the investment function'(Voigt 1979: 11). Transport expansion raises the returns to investment of firms by expanding their market area and sales there by enabling them to realize economies of scale. These effects derive

from the space linking role of transport, where by more areas are drawn into the 'monetized' economy. This will in the long run bring about a concentrated pattern of industrial development in areas with well developed transport infrastructure. In the context of Ethiopia, therefore one would also expect the industrial location patterns, flow of commodities are positively influenced by the level and availability of transport infrastructure.

In the context of an agricultural economy, such as Ethiopia's the provision of better and more extensive transport system should, therefore, bring about higher marketed out put levels, lower crop losses from storage problems and the farm collection and distribution of farm produce.

Transport has a necessary role for economic growth and social development of a country especially in the early and middle stages of development. In this period demand for transport tends to grow faster than GDP growth and calls for huge investments before the country is able to provide all the necessary resources of capital. The transport sector accounts for an average of 5-10% of GDP in developing countries and usually calls for a larger share (15-20%) of the total annual investment. In developed countries where transport infrastructure and systems are largely in place, a much more favorable situation exists-the contribution of transport to GDP is higher (7-15%) while the share of transport in total investment is considerably lower(8-10%). (Voigt, 1979:12)

In practice the impact of transport on wider development issues will be a function of a number of interrelated considerations and where transport does not produce the anticipated development it may be that it is the transport itself which is at default. For example timing is critical and inappropriate timing in relation to demand or the provision of associated services and inputs to other sectors may be counter productive. (Hilling, 1996:26)

Efficient highway system and modern modes of transportation allows geographic specialization, large scale production and increased competition. The concept of geographic specialization assumes that each nation or state or city produces products and services for which its capital, labor and raw materials are best suited. This principle assumes that an

area will specialize in the production of goods for which it has the greatest advantage or at least comparative advantage (Coyle, 1994: 3-7)

Development of an adequate transportation system is essential to a nation's economic progress. As an integral part of national production and distribution system, an adequate transportation network is necessary to provide a means of servicing domestic and international markets. National commodity flows necessitate the emergence of large scale distribution patterns with market areas for specific commodities being at least partially determined, by transportation prices. In underdeveloped countries, the emergence of national trade patterns is critical in triggering the movement from self-sufficiency (Robert 1981: 4)

2.2 Transport Demand

The need for transportation stems from the interaction among social and economic activities dispersed in space. The diversity of these activities and the complexity of their patterns of interaction result in numerous determinants of transportation needs. Commodities are shipped from place to place for a myriad of reasons steming from the economic necessities of production and consumption and from the pursuit of economic advantage and gain.

The demand for freight transportation is easier to conceptualize usually we deal with the demand for goods in a specific geographic location. (Donald, 1989: 77). The demand for freight transportation is based upon the demand for a product in a given location. Because of specialization of labour and mass production, specific areas have an over supply of product while others face deficit. This geographic imbalance in the supply of product given rise to the demand for freight transportation. The demand is derived from the demand for the produce (Coyle, 1994:33)

There has been a close link between growth in road freight transport demand and economic growth. Assumption for economic growth has been the basis for many forecasts of freight traffic. For freight transportation the demand is a function of the nature and importance of economic activities(GDP, Commercial surface number of tons) and of modal

preferences. The demand for freight transport increased as a result of both growing export/import and the related growth in the internal economy.

Transportation demand is itself expressed by a relationship between traffic volumes and transportation cost characteristics. The results of transportation demand analysis become, then relationship between traffic volumes on the one hand and transportation system characteristics and socio-economic activity levels on the other- (Kanafani 1983:3) The demand for transportation is a potential for a traffic flow. This potential is itself related to the production and consumption activities or indeed in general to any socio-economic activities (Kanafani 1983:13)

An alternative view is that transport provision is invariably a response to demand and it is rarely developed except where there is a demand. Demand for transport is of several distinct forms. Most obviously there is the revealed demand as expressed in the goods that are transported. However, at any place and at any point in time there is likely to be an element of latent demand. This comprises components of existing demand which can not be satisfied perhaps because of inadequacies in the infrastructure and also completely new demand that may be created by additional or improved infrastructure. (Hilling, 1996:10)

Demand for transportation is essentially a request to move a given amount of cargo a specific distance. Therefore the demand for transportation is measured in weight distance units. For freight, the demand unit is the ton-mile or ton-km (Coyle, 1994:14)

Transportation demand is derived demand while the volume of traffic on the road is affected by the condition of the road and by the transportation cost, it is also affected by the market. If the demand for the product is low or non-existent, there would be no traffic flow, no matter what improvement are made to the road. For this reason, we say that the demand for transportation is derived from the demand for commodities. (Robert 1984:4)

It is important to note here that demand analysis is distinct from traffic forecasting. The main purpose of demand analysis is to achieve an understanding of the determinants of the demand and of the manner by which they interact and affect the evolution of the traffic volume

Transportation demand analysis must be as old as organized transportation itself. Transportation demand analysis is the process of relating the demand for transportation to the socio-economic activities that generate it. In this process the type, level and location of human activities are related to the demand for movement of goods between the different points in space where these activities take place. The results of this analysis are relationships between measures of activity and measures of transport demand. (Kanafani: 1983:3)

2.3 Transport Supply

Transportation is a service that must be utilized immediately and thus cannot be stored . Mobility must occur over transport infrastructures, providing a transport supply. In several instances transport demand is answered in the simplest means possible, notably by walking. However in some cases elaborate and expensive infrastructures and modes are required, which represents a remarkable technological achievement. (Rodrigue: 2003:1)

An economic system including numerous activities located in different areas generates movements that must be supported by the transport system. Without movements, infrastructures would be useless and without infrastructures movements could not occur or would not occur. This interdependency can be considered according to two concepts, which are supply and demand.

Transport supply expresses the capacity of infrastructure and transport modes, generally over a geographically defined transport system and for a specific period of time. Therefore, supply is expressed in terms of infrastructure, services and networks.

In road fright industry, poor road conditions are primary cause of high operating costs. But the efficiency of the industry could be substantially improved by the great availability of vehicles improved access to commercial credit, reduced government regulations and restructures on market entry and privatization of parastatal trucking companies.

Relationship between transport supply and demand continually change, but they are mutually interrelated. From a conventional economic perspective, transport supply and demand interact until an equilibrium is reached between the quantity of transportation the market is willing to use and the quantity being supplied.(Rodrigue 2003: 3)

2.4 The Role of Road Transport

Road Transport grew rapidly after WWII when countries expanded their road networks considerably and built new roads, to open up land for development. By the end of 1980 there were about 11 million kms of road in developing and traditional economies. These roads now carry 60 to 80 percent of all passengers and freight transported. They also provide the only form of access to most rural communities In terms of assets, employment and turnover, these roads are truly big business. In spite of their importance most roads in these countries are managed and financed by bureaucratic road departments in the same way that social services are managed and financed (Heggie, 1998:1)

Road transport which grew rapidly after WWII is now the dominant mode of transport through out the world. The importance of main road networks is gauged by the proportion of passengers and freight movement made by road and by the size of the road business.

Most economies now rely heavily on road transport for passenger and freight movements. Even countries historically dominated by other modes of transport are now witnessing remarkable expansion in demand for road transport. The hard truth is that roads are the main arteries for moving good and people in the global economy, and they are becoming increasingly dominant (Heggie, 1998:9)

2.5 Road Transport in Africa

Road transport is the most expensive of all motorized modes of transport in Africa. It is also the most flexible as road vehicle can provide door-to-door services. It is only second to air transport when speed is the governing consideration and to rail or water

transport when low value heavy goods over long distances warrant it. It is adaptable to nearly all kinds of movement of people and goods.

The African international road network is presently estimated at approximately 140,000 Km (1986). The extent of the entire road network in Africa including unclassified roads is at least 10 times that of the primary road network. The present rate of development of the African road network as a whole, leaves much to be desired. It is made up of unintegrated, scattered and fragmented national networks of varying geometrical standards with very few interstate connections. Not only is the infrastructure inadequate, but the general condition of the network of both asphalt and earth roads is unsatisfactory in many countries. Maintenance of the network is insufficient if not poor and irregularly carried out. (UNECA, 1987:58)

Any new extended or improved transport infrastructure will affect the range, capacity and cost of movements effectively providing positive changes immobility and accessibility which will potentially enhance economic and social opportunity.

The reliability and speed of transport is critical for a range of goods and it becomes more important as one moves from basic, bulk commodities to consumer products which may be perishable, have short shelf life or have restricted market windows.

Change in the range of commodities carried is there fore a normal consequence of transport improvement often accompanied by an increase in the volume. It may also be that the directional balance of movements is altered and while better transport allows local people to move their produce to markets, it also enables goods from outside to be brought in more easily.

Road transport in Africa accounts for over 80% of all freight and passenger movements accounting for an average of about 80% in terms of ton-km and is therefore, essential for the operation of the African trade. As countries increase their outputs, stimulate trade and personal incomes, the demand for freight and passenger road transport will continue to grow at a rate of 4-6% per year. Roads and Road transport services in Africa are broadly characterized by high cost and low quality service due to a substantial

backlog of road maintenance, rehabilitation and weak institution and an inadequate network. The current efforts toward structural adjustment and assumption of growth by many countries are greatly dependent upon effective and efficient performance of the road transport sector Current difficulties in the road transport service have had a detrimental effect on program to resume agricultural production (UNECA, 2001: 1)

However, the sector has shown remarkable resilence in the face of difficult operating environment where operating costs are high and both vehicle and capacity utilization is low. If unit road transport cost are reduced by 10% due to appropriate policy reform actions, the annual savings to Africa could total 12-0 billion dollars. Such high costs result from inadequate regulatory environment, or by government oversight, excessive government regulations on market entry, lack of efficient logistics and management expenditures. Existing trade is therefore, performed at a very high cost because of poor service than those of other regions of the world. (WB, 2001:120).

The high cost and poor quality of transport service can be partly attributed to the inadequate road infrastructure. Performance of international road transport services has been hampered by cumbersome regulatory environment, lack of intermodal services, lack of adequate interface. Fragment road inspections and cumbersome customs procedures result in excessive long transit periods. Land locked countries pay additional transit charges amounting to about 20 percent of the value of goods transported, making many commodities less competitive in the world market.

The development of road networks and transport in Africa over the past two decades has been vital to the economic activities in all countries. At present the road network of 47 African countries include about 700,000 K/m of main roads (37% paved) and an equal number of rural feeder roads. Roads connect most productive areas with markets and trade centers and to where businesses conditions are favorable road transport services have been available. (WB; 2001:126).

Given the large area of Africa, the present road length averages only 5Kms for every 100 square kilometers with some variation among sub regions**.** Such an average density is low compared to other developing regions: Latin America (12Km/ Per 100 square

Kilometer) and Asia (18km per 100 square kilometer). The existing low road densities, the need to provide reliable access to all economically productive areas and the demands from fast growing population require selective upgrading and expansion of international and national road networks. (UNECA, 2001:4)

The increasing reliance on road transport in Africa has also been influenced by two main factors.

- First the flexibility of road transport operations which inspite of substantial failure are able to meet the criteria of speed, adaptability and cost required by local communities and

- Second, the ownership factor with in the road freight transport industry with about 90 percent of trucks in the hands of individual owner operator and between 60 and 80 percent of the industry in private ownership depending on countries.

Despite a negligible increase of 0.05% in vehicle per1000 population between 1980 and 1988 the reliance on road transport increased during the 1990 given the need for fast and reliable distribution of production components, the increasing pace of containerization in both domestic and external trade and the selection of transport options on basis of services rather than price alone. The intensification of road transport demand is expected to result in heavy use of available road infrastructure leading to difficult policy choices between preserving and maintaining existing road assets and expanding capacity to relieve the increasing road congestion.

To realize its full potential, the road transport industry in Africa, will need a major restructuring relative to its composition, its structure, and the financial, regulatory, and institutional environment in which it functions. Only then would it be possible to achieve a quantum leap in the cost and service efficiency of road transport services. Although traditional concerns related to the operational and organizational efficiency of road transport services will remain top priority in Africa, in the 1990s the focus of attention will shift gradually to regulatory and institutional issues such as the economic regulations of road

transport services, the role of state owned public transport and trucking enterprises credit and financial policies for the road transport industry, provision and maintenance of road infrastructure.

As a result, the total population of freight vehicles in Africa has failed to reach an acceptable life cycle, lack logistics efficiency the support of 'ad-hoc' facilities and generally offers low quality but highly priced services:

- First high cost and poor vehicles utilization which are not issues perse
- Second, the issue 'perse' (and consequent policy consideration) of which the most critical seem to be
  * The composition and condition of the fleet
  * The economic regulation of the industry
  * The role of state owned enterprises in the market place.
  * Credit and financial policies
  * Social organization and management factors
  * The condition of the road network
- Third, the role of government and its impact in the development of the industry.

Operational, organizational and regulatory and institutional issues in the sector have not been, however, the only negative factors conditioning the growth of road freight transport in Africa in recent decades. Additionally, and as a consequence of the poor choices offered to investors in productive and service sectors dominated by parastatal vehicle fleets have grown indiscriminately in quantity –but not enough in technical standards-to capacity surplus levels. Road freight transport subject mild regulation in most African countries, has been traditionally a refuge to a small investor government official or family entrepreneur searching for a safe guard to savings or windfall financial gains. Indiscriminate imports of different makes and models with out adequate provision of spare parts supplies in a foreign exchange scarcity environment have been additional negative factors.

2.6 Past Studies Related to Ethiopia

In road and road freight transport context studies have been made. Some of the studies are reviewed below.

World Bank (1989) and other documents examined that Ethiopia's transport system comprises about 35,000 km of roads and two ports at Assab and Massawa, prior to the liberation of Eritrea.

The inadequacy of the transport system to support an efficient production and distribution system has been discussed. It has also been discussed that Ethiopia's poor transport infrastructure has been hampering economic development and remain an obstacle to economic integration, enhancement of exports, putting imports to quick productive use and realization of greater economic potential.

The Chamber of Commerce of Addis Ababa (1991) also treated the commercial transport sector from the point of view of supply and demand for freight transport services. The fleet profile from various aspects of age, capacity and ownership has also been considered.

It goes without saying that the performance of good freight transport has increased from less than 2000 thousand tons to 6104 thousand tons per annum. In the five year plan of the Ministry of Infrastructure (2000/01-2004/05) it was to reache 7383 thousand tons. The bulk of freight transport is carried on the Addis Ababa - Red Sea corridor, which is the backbone of the country's transport system.

According to reports (1987/88) under normal operational conditions the existing trucking fleet would be adequate to cope with the current demand. However, if growth rates for tons and ton-km and operational deficiencies are taken into account there is evidence that fleets will fall short of providing the services required to meet transport requirements unless vehicles are procured.

According to Hughes road Transport Study (1983) in the dry cargo freight movement, however, it was assessed that each year a shortage appears to exist in the number

of trucks. The road freight transport performance could not meet the total transport demand generated by the economy. The major transport problem discussed are insufficient road-network, old and limited trucking fleet, slow forwarding operation.

Despite the stated problem the road transport has played great economic social and political roles, for it shares 90% of the total freight transport in the country.

Future freight transport demand has been forecasted by different bodies at different times. According to the Transport Sector Study (TSS) conducted by Louis Breger international (1983/84) forecasted the national freight transport demand in terms of tonnage. The ton-km forecast between 1990 and 2005 was made to reach 5818 million in 2005. This estimate of TSS was acceptable for it attached a good deal of optimism for the future of the economy as the economy is expected to take positive leaps.

Therefore, the literature indicates that if road freight transport is operated wisely it can be productive in the future. This is because there is considerable demand potential. Import and export offers could increase and the volume for domestic transport that could be potentially transported by road can be generated from agriculture and industry.

CHAPTER THREE

THE ROAD TRANSPORT NETWORK – AN OVER VIEW

3.1 General Road Network Evolution

Ethiopia, a land Locked country situated north east of Africa measures more than one million square kilometers of area accommodating about 75 million people (2004/05).

Ethiopia's transport system comprises approximately 36000 kms of roads(Federal, Regional and community roads) of which only 4600 kms are paved, and a railway line (781 km) linking Addis Ababa and the port of Djibouti(ERA, 2004:75). According to CSA, there is 16609 km road length in Ethiopia but considered only the federal Roads under ERA. There is also some river and lake transport in addition to international air transports and about 30 air strips and air fields. Roads comprise the country's dominant mode of transport. Surface transport comprising road and rail transport is the most dominant mode, contributing about 99.5 percent of the total domestic passengers and cargo traffic delivered by motorized transport Road transport alone accounts for over 95 percent of the total domestic traffic carried by motorized means of transport. (WB, 1989:1)

Due to its land lockedness and varied geographical terrain and scattered settlement pattern road transport systems become more important mode of transport in Ethiopia. Besides movement within the country, road transport plays an important role to cater the international transport requirement with the neighboring countries. Major international traffic can be observed in the Addis Ababa- Djibouti corridor.

Ethiopia's poor transport infrastructure has been hampering development and remains to be an obstacle to economic integration, enhancement of exports, putting imports to quick productive use and realization of greater economic potential in general. This inadequacy was particularly clear during the recent droughts, when the large increase in food imports put an enormous strain on the country's infrastructure, particularly its transportation capabilities (WB,1989:5)

The contribution of the transport sector to the GDP is still small-only about 7 percent inspite of its great potential. In fact, the transport system has been inadequate to support an efficient production and distribution system. It is poorly developed particularly in the agricultural rich west, in the south and southeast. In addition, much of the system needs rehabilitation. The provision of transport services in Ethiopia, moreover, is made difficult and expensive by the country's large geographical area, rugged topography, severe climatic condition and widely dispersed population.

The FDRE'S New Economic policy and the Agricultural Development Led Industrialization (ADLI) strategy has realized the lack of appropriate and efficient Infra-structure. Particularly road transport has been one of the bottlenecks for development. A well functioning transport system is crucial to the sustained economic recovery of Ethiopia.

Agriculture accounting for 45 percent of GDP is dominated by small holders. The major markets, the processing and collection centers for crops as well as the distribution points for agricultural inputs are concentrated in urban centers located at considerable distance from each other and from the port. (ERA, 1995:5). Growth in agricultural output, which will contribute to the primary basis for growth in the economy for the foreseeable future, requires reliable and cost effective transport of export crops from the major collection points to the port.

The road transport sector plays a role of outstanding importance in any national economy both through its own direct contribution to GDP(Gross Domestic Product) and employment as well as through the provision of services which are indispensable for the development of all other economic sectors. Any decision in the context of sectoral planning depends on quantitative and qualitative information on the structure and composition of the available transport means, transport operators, transport demand, transport services.

The increasing reliance on road transport in Ethiopia has also been influenced by two main factors. First the flexibility of road transport operations which in spite of substantial failures are able to meet the criteria of speed, adaptability and cost required by local communities and second, the ownership factor within the road transport industry with

about 90 of the trucks in the hands of individual owner operators and between 60 and 80 percent of the industry is with private ownership.

Road Transport Network service in the country is insignificant in relation to the size of the population and geographical area of the country. The distribution in the country is also uneven and therefore it could not contribute significantly to the efforts to balance the distribution of social services.

The present state of the road sector in Ethiopia in far from being satisfactory. Although the road network has increased by 110 percent since 1980, it is still the lowest in terms of density even by east African standards (see table 3.2). The classified road network in the country now measures some 36,500kms of which only 4635 kms are bitumen surfaced (Table 3.1). The size of the network in general and the proposition of effective and sustainable road sector development programmes in particular accords highest priority to rehabilitation and maintenance. (Tefera and Alemayehu, 1998:1)

The inadequate road network in Ethiopia has not only resulted in high transport cost, but also contributed to the problems of accessibility to high agricultural potential areas. High transport cost is a key issue considering the agricultural sector which accounts for about 45 percent GDP, employs over 80 percent of the work force and contributes about 80 percent of foreign exchange earnings. Only about 20 percent of Ethiopia's land areas is within 10km of an all weather road. (Tefera and Alemayehu 1998:1). It is against this background that major improvement of the road network, in terms of both coverage and quality becomes a perquisite for accelerated economic and social development.

The road infrastructure, recognized as the most valuable asset within the transport system in Ethiopia, requires proper and timely maintenance as well as upgradation appropriately. However due to lack of proper and timely maintenance in the county, the condition of the roads has been deteriorating fast and as a result transportation costs would be uneconomical, besides safety and reliability. Delays in the maintenance activities would make the situation much worse and in turn, it would be a serious hindrance to the development of the country, as the economy is highly dependent on the agricultural sector requiring an efficient and economic transport system.

Much of the road network of Ethiopia dates back to the 1930s and 1940s. In 1951 when the Imperial Highway Authority was established the total road network amounted to 6400 km. This network was built mainly during the Italian occupation; By 1974, when the Derg assumed power the road network had grown to 9260km of which 3,360 km were paved. The network has increased to 19020 km of classified roads in 1990 of which 4115 km (22 percent) were paved, 8943 km (47 percent) were graveled and the balance of 5960 km (31percent) were lower level roads. In addition there were some 20,000 km of unclassified rural roads, mainly farm to market road .The increase over these years was mainly due to the expansion of rural road network to facilitate relief operation activities to drought and famine affected areas in 1970 and 1980s. (ERA, 2003:9)

In 1994/1995, the road network in Ethiopia was about 23812 km comprising 8,180 km of trunk 7589 km of main and 8043 km of Regional roads. In terms of density, the road network is about 0.43 km per 1000 population and about 21 km per 1000 square km area.(Table 3.3) Thus, due to the low density of road network , large parts of the country remain isolated and dependent on pack animals and human loads (Tefera and Almayehu,1998:36). 70% of the population has no access to all weather roads. Nearly three quarters of all farmers are estimated to be more them half day walk from all weather roads. (WB, 1989: 2)

In 1998 there were a total of 30, 340 km of roads of which 5216 (17 percent) are track roads,5444 km (18 percent) link roads, 5516 (18.2 percent) are main access roads and 14164 km (46.6 percent) are regional roads. Of the existing classified road network (30,340 km) about 16160 could be considered as the main road network administered by the federal governmentn the remaining 13500km of 'low level' roads, generally categorized as 'rural roads' are under the Regional Rural Roads Organizations. In terms of surface type only about 4000km (13 percent) of the classified road network are paved. (Tefera and Almayehu,1998:36)

Table 3.1 Length of Classified Road Network (in km) (1996-2004)

Class of Road	Paved				Un paved				Total			
	1996	2001	2002 - 2004		1996,	2001	2002,	2004	1996,	2001	2002,	2004
Federal Roads	3656	3294	4053	4635	12133	12467	12564	13905	15789	16391	16617	18540
Regional Roads	-	-	-	-	8043	14480	16680	15956	8043	14480	16686	15956
Community roads	-	-	-	-	-	-	-	2000	-	-	-	2000
Total	3656	3294	4053	4635	20176	26947	29244	31861	23832	30871	33297	36496

Source: ERA, Network Analysis (2004)

From table 3.1 on can read that , the total road network has reached 36,500 km of which 4635 km (13 km) are paved and the remaining 31861 km (87 percent) are unpaved i.e. gravel roads. The federal roads (paved and gravel) which share more than 50 percent of the total road network are maintained by ERA and the remaining 50% by the Regional road Authority, RRA(44%) and the local community(6%)

The road network related to the size of the county and the structure of production and population distribution, reflect the level of connectivity (or the lack of it). From the outset. It can be concluded that the level of connectivity for Ethiopia, which is about 1.1 million square km in area has a very low level of connectivity with 36500km of roads.

The federal road network is expected to give good connectivity to all regional head quarters, main cities ports and main international entry points. However only about 30% of the rural areas are presently connected with all weather road and many of these in poor condition (ERA, 2002:4-2).

Table 3.2 below shows the road density for Ethiopia and COMESA member countries. The road density for the main road network for Ethiopia and a number of African Countries is also shown in annex 1. On both measures Ethiopia has a low road density.

Table 3.2 Road Infrastructure in Africa (1999/00)

Country	Area km^2	Pop 10^6	Road Network km	Tarred Roads (%)	Road Density Km/000km^2	Road Distribution Per 1000
Ethiopia	1,104,300	61.30	28,652	13.3	23.4	0.47
Eritrea	121,320	3.40	4,010	21.8	33.1	1.18
Djibouti	22,000	0.43	3,065	45.1	13.93	7.06
Sudan	2,505,810	28.30	11,900	36.3	4.6	0.42
Somalia	6,376,601	9.67	22,100	11.8	3.47	2.29

Source: World Development indicators, World Bank 2000

Table 3.3 Road Density: Cross Country Comparison

(in km in 1994)

Country	Density Per 1000 Pop	Density Per 1000 km2
Ethiopia	0.43	21.5
Bangladesh	0.13	103
Elsalvador	1.72	445
Nicaragua	3.68	107
Tanzania	1.07	30
Turkey	1.00	75
Average for Africa	0.61	50

Source: ERA, 1995

The Road density in Ethiopia is also among the lowest in Africa and the other developing countries with an estimated 21km of road for 1000 sq km. and 0.43 km of road for 1000 population. (Table 3.3)

The classified road network is one of the least developed in Africa with a density of 24.6Km per 1000km square area and 0.50 km per 1000 population compared to 118km and

2.4 km respectively in the neighbor county Kenya (Annex 1). Ethiopia, a country twice the size of France has a road density the lowest in the continent by comparison for the weighted mean of road density in all of Africa is 2.6 Km per 1000 persons and density of 58km 1000 square km.(WB,1998:2).

All too frequently inadequacies of road transport are cited in explanation of poor economic performance and lack of road capacity becomes apparent when there is the need to transport large quantities of, for examples relief aid into remote areas of the country.

3.2 Regional Distribution of the Road Network

There is no reliable Data regarding the distribution of the road network by region. However, in 1997/98 the breakdown of the road network by region and surface type was reported as shown in the following table :-

Table 3.4 Length of All weather Roads(in km) By Region (1997/98)

Regional State	Gravel	Paved	Total
Tigray	1471	220	1691
Afar	484	673	1157
Amhara	4381	565	4949
Oromia	8621	2054	10685
Somali	1349	-	1349
Benshangual Gumaz	424	-	424
SNNPR	2722	352	3074
Gambella	932	-	932
Harari			
Addis Ababa			
Dire Dawa			
Total	20384	3864	24261

Source CSA May 2000 transport and communication Statistics Bulletin 229, Addis Ababa p. 19

Ethiopia's road infrastructure, which is crucial to the linkage of rural communities to the urban areas has deteriorated markedly over the last decades. The state of the regional roads, two thirds of which are virtually impassable imposes significant penalties on agricultural activity through its effect on vehicle operating costs, delayed evacuation and damage to crops.

3.3 Road Condition

The road condition in Ethiopia is still worse. It is estimated that only about 28% of the regional roads are presently in good condition. After repeated maintenance has been undertaken on the road network, in general and rehabilitation and upgrading of some road segment in particular, the road network in poor condition has been reduced and significant gains have been made in terms of savings in vehicle operating costs and travel time and saving the road infrastructure asset.

The condition of the road network in 1995 and 2002 is compared as follows.

Table: 3.5 Condition of Road Network (Percent)

Road Type	Good			Fair			Poor		
	1995	2001	2002	1995	2001	2002	1995	2001	2002
Federal Roads	14	30	31	36	27	25	50	43	44
Regional Roads	25	25	28	15	30	35	60	45	37
Average	18	28	30	29	28	30	53	44	40

Source: ERA(2002)

The length of Road network in good condition is only 30% (Table 3.5). The conditions of the country's road are, thus, very poor and situation has been worsening in lack of financial resources and institutional constraints for proper and timely maintenance. The poor condition of roads in the country imposes significant cost to the national economy, particularly to the agricultural activities by higher transport costs and in travel time loss for freight and passenger movement. The deteriorated road infrastructure becomes an obstacle to the implementation of the Economic Development program of the country.

A combination of factors has contributed to the present poor condition of the road network these include:

a) The old age of the road network. Most of the roads were constructed over 20 years ago and have now exceeded their design period of 10 years.

b) Poor safely measures such as road signs and markings.

c) Heavy overloading. Most of the roads were designed for maximum axle load limit of 8 tons, however, most of the vehicles running on them are over the legal limit and

d) Poor quality of road construction and Inefficient maintenance over the years (ERA, 2002)

3.4 Road Sector Development Program (RSDP)

Road infrastructure in Ethiopia had reached such a level of deterioration by the early 1990s that it had became a serious hindrance to country's revival. In recognition of this, the government with the support of its development partners launched the Road Sector Development Program (RSDP) in 1997. In this regard, the rehabilitation of trunk roads and upgrading of some link roads have been accorded highest priority as they have proved to be a major impediments to evacuation of crops and the delivery of agricultural inputs and access to ports.

The general justification of the Road Sector Development program is that meaningful economic growth in Ethiopia, a prerequisite for tackling the wide spread and pervasive poverty in the country, cannot be sustained unless road transport cost is reduced and accessibility to the primary agricultural areas is markedly improved.

Without continuing investment in the road sector, Vehicle operating costs will remain high and large parts of the country will remain inaccessible to road transport and agricultural inputs and outputs will continue to suffer from high transportation costs, effectively stifling production in many areas.

Aside from a need to construct rural roads much of Ethiopia's existing primary road network needs rehabilitation or upgrading. The main road, (909), connecting Addis Ababa, the capital, with the port of Djibouti, needs upgrading and strengthening; since about 80% of Ethiopia's total export and imports and over 40% of all road transport freight in the entire country moves over this road. Only About 6-7 percent of external trade now moves on an alternate route between Addis Ababa and the port of Djibouti an inefficiently run railway whose capacity without rehabilitation is now limited to less than 350,000 tons per annum (WB, 1987:1).

The RSDP – a ten year Development plan to remedy the inadequacy of the road network foresees to rehabilitate more than 10,000 km, to upgrade more than 6000 km and open 18,000 km of new roads. The RSDP includes also action inorder to establish a sustainable road maintenance system, Axle load control and labour based technique development. RSDP designed to reduce vehicle operating costs, extend road access, develop institutional capacity is divided into two phases: Phase I 1997-2002 and phase II 2002-2007 to bring the road density to 0.54 km /1000 population ad 38 km /1000km^2 . In the first phase. At the completion of RSDP the Ethiopian network will increase by 77%. In particular, paved roads will increase by 1145 km and gravel roads by 70% (ERA, 2002).

During RSDP I as of June 2002, total of 8,636 km of road were constructed or rehabilitated of which 2,636 are federal roads and 6000km are regional roads (ERA, 2002). The second phase of this initiative (RSDP II) is now underway (2002-2007) and additional projects are being identified for implementation. The primary objective of RSDP II is to restore and expand the country's road network in order to support sustainable economic development. In addition, RSDP II is to provide the government with the development of strong management and technical capacity to manage road networks and to develop the capacity of the local contracting industry.

One of the specific targets of RSDP II is to increase by 2007 the percentage of acceptable condition of the country's paved, gravel and regional roads from 57% (average condition of all roads) to 84 percent, 63% and 60 percent respectively. Other targets include increasing the density of Ethiopia's road network with respect to area and population. The objective is to increase new road construction in the country to reach the level of 65 km of road for each 1000 km^2 of land area. In addition the goal is to increase the density of roads per 1000 population from 0.48 km to 0.91 km by 2007 (ERA, 2002:1-2).

The RSDP II document (Nov 2001) gives an estimate that the country would need 2793 additional road links with a total length of 98000 km in the future. However, the 125,000 km road length including existing roads is not excessive for Ethiopia, a country twice the size of France.(ECA, 2002:4-2)

Further RSDP-II (2002-2007) was launched focusing to continue the momentum established in the RSDP-I towards the essential and sustainable road infrastructure in terms of road condition and accessibility. However, the performance targets set under the RSDP-II are presented in the following table (Table 3.6).

Table 3.6 Targets under RSDP II (2002-07)

Indicators		2002	2004	2007
	Asphalt roads	35%	44%	57%
Proportion of road In good condition	Gravel Roads	30%	31%	42%
	Rural Roads	28%	30%	40%
Road Density/ '000km^2		30km	30.8	35km
RoadDensity/'000 population		0.50km	0.49	0.50km
Area, 5km from all weather roads		75%	(73)	70%
Average Distance to all weather roads		17km	16 km	14km

Source: RSDP II –ERA (2003).

One can understand from table (3.6) that the physical target in terms of road condition is to have by 2007, 42% of the roads in good in condition (from the current 35%). Also to selectively construct new road to have 35km /1000km^2 including low class roads and install regular maintenance on much of the Ethiopian road network. In addition the road network in terms of density per 1000 persons (population)is expected to be 0.50 km per 1000 population in 2007. (ERA, 2003:1)

The growth of an economy is dependent on making more efficient use of transport facilities. The importance of road transport in Ethiopia, accounting for more than 90% of freight tonnage, is hard to overstate. However, the road network is generally poorly managed and badly maintained. The sub sectors development effort should thus seek to improving transport operating efficiency and reducing road transport cost for freight so as to encourage production and export

CHAPTER FOUR

ROAD FREIGHT TRANSPORT VEHICLES

The efficiency and adequacy of road transport is a function not only of the road network but also Vehicle availability and sustainability for particular tasks in specific conditions. Roads are of no use without road Vehicles. This chapter therefore tries to deal with commercial dry cargo fleet from various aspects such as Vehicle stock (size), age capacity and ownership.

In Order to cater for the demand emanating from, export, import, domestic cargo movement availability of vehicles with lower age spectrum higher carrying capacity and formidable fleet size are presupposed.

Road freight transport has a detrimental role in affecting positively or otherwise sectors that require efficient input-output movements and accessing consumption centers, which other modes are not in a position to cater for in terms of cost and coverage.

Indications to the regeneration of the service at large and future requirement for more investment therefore envisage for the study of the current situation of vehicle stock, vehicle age and capacity in the country.

4.1 Vehicle Stock

According to Ministry of Infrastructure (MOI) registered data, the total vehicle fleet in 2003/04 in Ethiopia was around 146,807 which comprised 59812 private cars, equal to 41% of the total fleet, 48761 trucks (dry cargo) equal to 33.2%. Station Wagons, Taxis and Buses comprise 22.1%. Liquid cargo 1.2% and unspecified vehicles about 2.7% of total fleet. Table 4.1 shows total vehicle registration in the last fifteen years. In this period the average growth of registered vehicles has been equal to 5% per year, but after liberalization of the market and facilitation of imports in 1991/92 there has been marked increase of vehicle. In the year 2003/04 the annual increase has reached a 10% value in comparison with the average 2% of the 1990/91.

Tabel 4.1 REGISTERED VEHICLES BY TYPE AND SIZE (1989/90 -2003/04)

Year…> Type of Vehicles	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
1. private cars	26,694	28.004	26,717	28,423	30,902	35,686	35,219	37,906	42,296	43,338	42,767	42,586	47,566	51,493	59812
2. Station wagons	8,832	8,811	10,421	5,636	6,094	6,101	7,847	8,090	5,535	5,603	6,282	6,984	7,001	6,936	8472
3. Taxi less than 30 seats	931	920	1,004	2,070	1,705	1,850	1,935	2,057	3,786	4,179	4,130	4,547	5,006	5,732	6714
4. Taxi 5-12 Seats	1.166	2,891	3,267	3,163	3,164	4,455	4,660	4,465	6,049	5,408	5,716	5,764	6,414	6,757	5540
5. Bus less than 30 seats	2,996	2,448	2,853	1,491	5,453	6,994	7,567	9,635	9,778	12,076	7,745	9,416	9,015	8,844	8186
6. Bus above 30 seats	471	724	807	551	889	1,699	2,387	2,625	2,825	2,129	2,173	2,551	2,903	2,729	3599
7. Truck (upto-70 quit.)	6,829	6,717	6,813	10,630	10,347	11,069	11,492	12,286	13,983	15,193	24,423	27,069	25,332	25,393	32517
8. Trucks (71-180 quit)	5,206	4,733	5,019	5,590	5,866	8,504	10,713	10,996	10,778	10,171	10,113	10,518	12,907	13,824	10724
9. Trailer	1,669	1,529	1,185	1,903	1,761	2,505	3,227	3,698	2,993	2,598	3,143	3,081	3,577	3,972	4530
10. Truck-tractor	717	584	497	737	515	480	1,286	1,108	1,005	1,028	1,235	1,278	1,396	1,153	904
11. Semi-trailer > 300	535	228	323	271	478	360	971	190	353	780	441	462	62	239	86
12.Tanker	855	715	542	908	760	1,191	994	1,085	1,236	905	1,211	1,453	1,480	1,527	1052
13. Trailer	474	366	250	600	276	877	900	856	815	570	733	811	782	741	450
14. Semi-trailer	89	68	54	28	44	7	7	36	19	129	43	42	44	20	236
Sub total	57\,464	58,738	59,752	62,001	68,254	81,778	88,205	95,033	101,451	104,107	110,155	116,562	123,485	129,360	142822
15. Motors, Machinery & Special equipment	1,864	1,838	1,017	1,087	1,465	1,501	2,252	1,469	1,432	1,743	--		-	-	-
16. Unspecified vehicles				1.432				3,985	3,985	-	2,067	2,170	2,575	3,578	3985
Grand Total	59,328	60,576	60,769	64,520	69,719	83,279	91,457	96,502	102,883	105,850	112,222	118,732	126,060	132,938	146807

Source: *Ministry of Infrastructure, Annual Statistical Bulletin, June 2005.*

: Csa; Statistical Bulettin No. 286,2003

Note: Vehicles in No. 12, 13, 14 are for liquid cargo.

However this fleet is quite small for country of the size and population as Ethiopia. It corresponds to an average vehicle ownership of 2 vehicles per 1000 persons. This figure represents about one tenth of the average of 1996 vehicles ownership in sub-Saharan Africa which was 22 per 1000 persons (UNECA, 1987:7).

Over 146,807 total vehicles registered, 74538 vehicles are commercial vehicles (dry and liquid cargo, buses and taxis), which is 50.8%. Dry cargo vehicles account for 33.2% of the total registered vehicles fleet in the country and ensure the transport of more than 90% of total tons covered by all modes of transport. Registration of dry cargo vehicles has also increased markedly from the liberalization of the trucking industry in 1991/92.

The organization of road freight transport services in the subsector is diverse in structure. It is estimated that there are about 36724 dry cargo freight transport vehicles operational (75.3%) which are inspected and registered in the country. Those operating under strictly commercial road freight transport activities (such as associations, government commercial enterprises with their associates, and private and share companies) constitute some 21395 vehicles (Table 4.2). Some registered as private commercial are predominantly owned by government institutions of which different ministries and industrial establishments run some 957 vehicles (which are not covered in this study) yet engaged or operating in commercial freight transport activities.

Private commercial establishments run by individuals have a formidable number of vehicles and have the advantages of forward and backward integration. These establishments operate both as own account transporters and also carry goods on commercial basis, which favour them to a huge margins of financial advantage since the licensing fees, levels of taxation and load factors are more favorable than those strictly commercial operators.

If some regulatory adjustments are made for non-commercial institutions to be dismantled and re-registered to operate as business entities the current level of size and capacity of freight transport industry tend to be higher and perfectly competitive.

4.1.1 Structure of Dry Cargo Vehicles

Out of the 36724 dry cargo vehicles inspected and registered in 2003/04 about 21395 are registered as strictly commercial vehicles. The following table resumes the main features of the dry cargo fleet in the country.

Table 4.2 Commercial Dry Cargo Freight Transport vehicle Fleet (2003/04)

	Parastatals	Affiliated Associated	Association	Share Companies	Individual Enterprises	Total Comm.
Number of Vehicles	472	8306	9523	2492	602	21395
Average Pay load (ton)	30	8-9	9-12	30-35	25	14
Total capacity (ton)	14000	71600	105000	81000	15000	286,000

Source : Road Transport Regulation Study, 2004
: RTA, Planning Services

Dry Cargo industry is dominated by three concentrations of commercial operators: parastatals and Associates/ Affiliated, Transport Associations and share companies, which constitute more than 94.8% of the commercial transport average capacity in the country.

The total number of long haul freight vehicles in operation in Ethiopia, will give a total of 36724 vehicles serving the freight transport sub sector. Considering the parastatals, the share of government controlled (associated) trucks, it would be 41% of commercial fleet. It is assumed that the operation of the parastatals fleet can affect the required free market conditions.

Presently a total of 21395 different capacity commercial freight vehicles operate under four structures which are parastatals and associated, associations, share companies and individual enterprises. The private sector, associations, share companies and individual enterprises are providing about 59% of vehicles and 71% of freight transport capacity. (Table 4.2)

According to RTA available statistics (Table 4.2), the main groups of commercial transport organizations in the dry cargo market in the country are:-

a) Parastatal Enterprises (Comet, Bekelcha and Shebele) owned 472 trucks with trailers. The total transport capacity is equal to 14,000 tons and the average capacity of their vehicles is 30 tons.

b) Associates_ are vehicle owners who operate exclusively as Associates to the parastatal enterprises, owning 8306 trucks. Their total capacity is estimated at 71,000 tons and the average vehicle payload is between 8-9 tons. Associates are expected to produce a waybill (permit) issued by a parastatal company to transport freight that they themselves have marketed.

c) Transport Associations numbering about 230 are formed by individual owners, with a total of 9523 vehicles. Their transport capacity is about 105,000 tones with an average vehicle pay load of 9-12 tons.

d) Share Companies both private and public, owning 2,492 vehicles, with a total capacity of 81,000 tons and with average payload 30-35 tons.

e) Individual Entrepreneurs are working outside the three main conglomerates (parastatals and associated, associations and share companies) owning 602 vehicles with a total estimated capacity of 15000 tones.

4.1.2 Growth in Registered Commercial dry Cargo Vehicles (1994/95-2003/04)

Table 4.3 Registered dry Cargo vehicle stock Growth rates (percentages). 1994/95-2003/04)

Year	Vehicles	Percentage
1994/95	22919	
1995/96	27689	20.8
1996/97	28278	2.1
1997/98	29112	2.9
1998/99	29770	2.3
1999/2000	39355	32.2
2000/01	42408	7.8
2001/02	43274	2.0
2002/03	44581	3.0
2003/04	48761	9.4

Source: Ministry of Infrastructure, Annual statistical Bulletin, June 2005
: Author calculation

As indicated in the table 4.3 the number of dry cargo Vehicles increased from 22919 in 1994/95 to 48761 in 2003/04. If we look at the size of the trucks 66.7 of them are light trucks carrying less than 8 tons (Table 4.5). The statistics indicate there was a steady growth in dry cargo commercial vehicles. The average annual growth between 1994/95 and 2003/04 is 8.25 percent. This rapid growth in the number of dry cargo vehicles can be an indication of the increased volume of freight handled by road.

4.2 Vehicle Age distribution

The combined stock of freight transport vehicles in Ethiopia have an average age of over 15 years and commercial freight transport vehicle share the same age spectrum. For this picture of age pyramid, the general recognition is that the restrictive vehicle import regulation cycle that existed in late 80^s and early 90^s is to blame.

These regulations have rendered to the rapid aging of the stocks in general and of freight transport vehicles in particular inducing major impact on operating costs fleet utilization rates, and reliability of the service.

Moreover the aging of vehicle stock have had negative impacts on entrepreneurial propensities which would have contributed to positively changing the age pyramids of vehicle stock of the country. These are exampled by;

- Large volumes of vehicles imported to the country were through "franco-valuta" terms of trading. Almost all vehicles are un-refurbished "second hand" bought of the street which have served in foreign countries.
- Appropriate verification to specify age has always been lacking, and all vehicles imported to the country have registration as new giving confusion as to the exact volume of brand new vehicles.

Data from RTA has been used to bring some understanding as to age distribution of commercial freight transport vehicles. Available data shows that about 50% of all freight transport vehicles have an average of 15 years and above, which is far higher to be considered economically viable.

Trade liberalization led to rapid increase in the import of often very old second hand vehicles which increased the transport capacity but rather contributed to the reliability problem. In 2003/04 the table (Table 4.4) shows more than 45% of the freight vehicles were more than 15 years old.

Table 4.4 Age Distribution for Commercial Freight Transport Vehicles (2003/04)

	Commercial freight transport Vehicles age in %								
Age group	**unknown**	**< 5**	**5-10**	**11-15**	**16-20**	**21-25**	**26-30**	**>30**	**Total**
Number	**4842**	**2397**	**2976**	**1487**	**3553**	**2841**	**1855**	**1378**	**21395**
%	**22.6**	**11.2**	**13.9**	**6.9**	**16.6**	**13.3**	**8.8**	**6.7**	**100**
	22.6	**32.0**			**45.4**				**100**

Source: *Ministry of Infrastructure, Annual statistical Bulletin June 2005*
: RTA, annual Report (2003/04)

If economic life of vehicles is restricted to only 15 years the total stock of vehicles serviceable in the country will drop to even lower than the present. (32%).

The age distribution implies that in the future road freight vehicles may not be able to fill in the demand that will emanate from growth in economic activities. Assuming that there will be no withdrawal or addition to the stock of vehicles (say in some 5 years time) current vehicle serving economic sectors could pose challenges to development.

By way of analogy, the stock of vehicle available in the country suffers from old age and uneconomic service provision. Moreover, as a result of old age, vehicle utilization rate becomes very small. In addition, vehicles with older age normally operate on short distances, and cost of operation seems to be high due to high unit cost input per distance.

Road transport is unsafe. There are large numbers of road accidents in Ethiopia. In 1996/97, for example, there were 1667 road deaths on the Addis Ababa – Djibouti corridor alone (ERA, 2002:19).

The poor quality of road construction in respect to the terrain associated with the very poor quality of driving and old vehicles often cause fatal accidents. On the other hand, the road improvements led to increased speed which with poor safety measures such as road signs and markings, certainly increase the number and severity of road accidents.

4.2 Vehicle Capacity

The real fright transport capacity in the country is higher than the commercial one if the total dry cargo fleet is considered. A multitude of own account vehicles which are not available for commercial transport create the disparity.

Considering capacities with more than 9 tons Freight Transport Associations remain to have the dominant registered capacities. Associations constitute about 44.5% of the total vehicles with capacity above 9 tons. (Table 4.2).

Table 4.5 Distribution of Inspected and registered Dry Cargo Freight Transport Vehicle Stock (2003/04)

Capacity in quintals	Non rental Vehicles	Rental vehicles	Total vehicles	% distribution of the Total	
Pickups<15	9031	1441	10472	28.51	74.35
Trucks 15-35	1056	2635	3691	10.05	
>> 36-70	2593	3724	6317	17.2	
>> 71-120	1525	5301	6826	18.59	
Trucks Trailers 121-180	735	2893	3628	9.88	25.63
>> 180	148	122	270	0.73	
Trailer	184	4346	4530	12.33	
Road Tractors	34	870	904	2.46	
Semi trailer	23	63	86	0.23	
Total	15329	21395	36724	99.98	

Source: MOI, annual Statistical bulletin, June 2005
: RTA Planning service
NB: Rental vehicles are for commercial purposes running for profit.

Among the total inspected dry cargo vehicles (Table 4.5) 27306, (74.35%) constitute Vehicles with off take capacity of less than 120 quintals while those supposedly economically beneficial vehicles with capacity more than 120 quintals are only 9418 (25.63%) indicating the supply of Vehicles with higher capacity is still insufficient.

There is a maximum potential of 305160 tons (Table 4.2) single trip when considering the national off take capacity in freight transport, provided all loads carried are purely by commercially registered vehicles. Disparity exists due to the fact that, the total national capacities are much higher than the figure indicted above if all freight transport vehicles in the country are considered (the army, government own account).

Despite the availability of formidable potential, all high capacity vehicles are not efficiently operating. This is partly true when referred to age spectrum, that available vehicle stocks have higher proportion of the older age in their composition. As a result, with such aging vehicle size to contemplate efficient operation remains difficult.

Referring to capacity with respect to registration category, of the total maximum off take potential capacity, transport associations have a share of 37.4% amounting to 114,276 tons, while private and share companies have total maximum off take potential of 102,270

tons (33.5%) of the total commercial fleet capacity. Government commercial vehicles have off take capacity with 29% which is 88600 tons (see table 4.2).

However, Capacity potentials with respect to government enterprises presupposed to shrink overtime. This is partly because the subordinate under the commercial enterprises classified as "associates" and paying service commission to the parastatals have the possibility of forming their own transport associations.

Where the legal foundations and justifications to bind them as "associates" do not exist, such instances will add up to the increasing share of transport associations. The change under these circumstances will boost the capacity of freight transport associations and make them still the biggest transport stakeholders in the country.

In summary, the total vehicle fleet in the country is around 146, 807 of which dry cargo trucks share 33.4%. The number of dry cargo freight transport vehicles inspected and registered is about 36724 vehicles. Those operating under strictly commercial transport activities constitute 21395 vehicles, dominated by parastatals and Associated, Associations and share companies.

Though the size of dry cargo vehicles registered grew by 8.25%, about 50% of the vehicles have an average age of 15 years and above which is not considered economically viable.

The real freight transport capacity in the country is higher than the commercial one. Despite the availability of high potential all are not efficiently operating due to higher proportion of older Age. However the demand emanating from other economic sectors presupposes the presence of vehicles with lower age spectrum, higher carrying capacity and fleet size.

CHAPTER FIVE

ROAD FREIGHT TRANSPORT REGULATIONS

In this chapter the Road Freight Transport operation, Transport Tariff, Axle load regulations and government institutions in Road Transport are discussed.

5.1 Road Freight Transport Operation

The road transport administration framework in Ethiopia is complex and disarticulated horizontally among the different administrative sectors (transport infrastructure, trade, traffic police, finance), and vertically among the federal states and each single Regional State. There is no cooperation into an operative road transport policy in which regulation, taxation, enforcement and information are conceived as means of appropriate, efficient and sustainable road transport services.

Under the pervious regime, the Peoples Democratic Republic of Ethiopia (PDRE), all commercial transport operators were organized into zones or 'Ketenas' which were controlled by the Ethiopian Freight Transport Corporation (EFTC). This State Corporation operated its own large truck fleets and managed other operators. EFTC was the commercial trucking organization running a fleet of over 1200 trucks, and managing the private truckers as its subcontractors. The role of the private owners was reduced to operating and maintaining their vehicle. EFTC obtained the business allocated loads organized payments etc, and received a 5 percent commission. Freight rates were set by the government. The rates /km varied little with trip distance, commodity or road type and condition. But to ensure equity among operators routes were rotated.

The Ministry of Transport and Infrastructure centrally controlled the transport sector while publicly owned corporation (EFTC ad EPTC) provided freight and passenger services. RTA'S role was to set and enforce licensing, tariff rates and routes according to the so called 'Ketena' (Zones) system. Private activities were confined to a few single truck owners and small garage operations under the two corporations and there was no incentive for improvement of private services.

The policy of the Ethiopian Government (PDRE) regarding Commercial road transport could be generalized as having been one of strengthening the state sector and regulating the service by means of tariff setting and route allocation.

The ten year plan of the country (1984/85-1993/94) envisaged an increase in the share of the government by 75% on freight transport service (Chamber 1991:23). Some studies have indicated that the government sector operated inefficiently compared to the private sector. For instance, the average annual coverage of private truck is 42,000 km, while the government owned trucks accomplishes only 35,000 km. On the other hand, cost per km for government owned truck is 105 Ethiopian cents, while that of private was only 95 cents. (Chamber 1991:25) The strategy of expanding the share of the government has therefore meant expanding the inefficient sector at the cost of the efficient private sector.

Prior to 1974 the revolution, private individuals could import vehicles by applying for foreign currency from National Bank. Later on a stringent foreign exchange control was introduced and allocation of foreign currency for importation of vehicles by the private sector was stopped. In 1984 imports of new and second hand trucks were allowed on Franco-Valuta bases.

The tax policy of the PDRE regarding the commercial road transport sector is mainly designed to limit imports and increase government revenues. The existing tax policies compliment the import restriction policies. The tax structure in force to date was based on the cost and freight value with depreciation allowance of 1% per month.

Trucks were charged 44% of their cost and freight values of the import and additional 50% was charged as surtax. In 1989, the tax structure is more refined and to some extent encouraged the commercial transport sector ____ a tendency of encouraging higher capacity vehicle which was lacking in the previous tax structure. However, both import and tax policies require revision and should be changed for the better (Chamber 1991: 26-28).

The liberation from the Derg regime has brought changes in the political and economic organization of the country. Ethiopia has shifted from a unitary state to a Federal

System, with devolutions of power to the Regional State and their communities. The previous command economy has been replaced by a market economy based on private investments and competition. The new constitution (Proclamation 1/1995) has sanctioned the new form of Federal State and the division of powers between the Federal government and the Regional governments. (RTA, 2002:18)

An economic reform program has been initiated by the Transitional Government of Ethiopia (TGE) since 1992. The program was meant to deregulate various economic activities, which were previously owned and run by public entities highly controlled and regulated by government. Price controls have been nearly eliminated; a new more liberal investment code has been adopted.

Although some indications were given during the Transitional Government of Ethiopian (1991-1995), there is no official document issued by the present Government of the Federal Democratic Republic of Ethiopia (FDRE) indicating clearly the Government's policy in the transport sector. The Government's strategy for the development of the transport sector is any way in tune with the economic development strategy based on market economy, private investments and competition.

In particular the government road transport strategy is based on the rehabilitation of the main road network and the development of an efficient road transport industry, even if the dispersed population will still rely on human and animal transport up to the nearest all weather road. The government has developed high investment programs for the road network rehabilitation/extension and has taken action to establish the foundation of a competitive road transport market. (RTA, 2002:18-19)

Referring to the basic principles of economic development policy adopted by the government it can be said that Ethiopia's road transport is today based on competitive and free market principles. The role of the government should be limited to formulation and enforcement of rules / regulation, control of monopoly situations, promotion of competitive markets liberalizing entry / exit and prevention of safety and environmental problems. According to investment regulation ownership and road transport operation is anyway confined to Ethiopians, but there is a tendency to open the market to a limited number of oil

companies for Tanker fleets (Regulation No. 84/2003). The government ensures the promotion of investments through access of domestic operations to commercial credit, also for garages, fuel station, spare part shops through promotion of local manufacturing local assembly and manufacturing of critical spare parts and equipment. (RTA. 2002:19)

The road transport sector in Ethiopia today is not effectively deregulated. Government owned public and freight vehicles are being commercialized. There is free entry and exit in the market government is not involved in route assignment or tariff set up. In order to match the transport supply the private sector has received assistance by the government through credits and loans. In principle, the market is accessible to any private person or company that wants to offer service. However the road freight transport market is anyway characterized by a situation of ' imperfect competition' due to the presence of the large conglomerates of operators which in different ways exert some oligopolistic influence in road freight market and do not stimulate the entrance of individual operators.

5.2 Road Transport Costs (Tariff)

Road transport Costs are represented by vehicle operating costs and the cost of time. Road transport Costs include also Costs of road maintenance, which is paid mostly by fuel taxes for road fund. Transport operators recover their transport costs applying road transport tariffs, which allow them to gain a reasonable profit from the services given. Freight transport tariffs should be established directly by the market through free competition among operators. The prices will then be aligned to freight transport costs.

Freight transport costs depend on different factors: economies of scale in truck size (which favour 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, restriction in working hours, road conditions (such as mountainous terrain, deteriorated pavement and traffic congestion) standard of trucks in terms of design and condition (which affects speed availability and consumption rates for fuel, spares and other inputs, quality of services offered (specialized freight services may involve higher costs) input or factor prices of labor, vehicles, spares and fuel, quality of management. (RTA, 2002:23)

Referring to the history of transport tariff in Ethiopia, it indicates that tariffs were administratively set for the first time in 1960 for the passenger carriers alone. Freight transport rates were at that time generally set through the open market upon agreements between the providers and the user 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 a minimum and maximum rate, which, however, could not be implemented. In 1976, tariff was set administratively which made freight transport vehicles under a strict control of government 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 costs of vehicle 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.

Among the factors that affect the availability of the transport service, the transport tariff is obviously a fundamental one. It is the price that transport agencies receive for the costs they incur and users pay for the services they get. As such, whether or not such a price is capable of allowing transport service providers to stay in the sector of inducing additional investors for entry, and of enabling user to get an efficient and competitive service is a crucial question.

However, substantial deregulation occurred in may 1992 (proclamation 14/1992) with official abolition of the ketena system and tariff control over dry cargo. Prior to deregulation in 1992, the official rate on main roads was Birr 0.125/ ton-km, with slightly

higher rates for roads in difficult terrain. At the same time contract rates on the Assab / Djibouti route were Birr 0.22 - 0.25. Since deregulation rates have risen but much less than was feared. Rates on the Djibouti route fluctuate within the range of Birr 0.26 - 0.40 with Birr 0.32 being most frequently quoted. The rate for export traffic previously the same as import rates are Birr 0.13 - 0.165 depending on commodity. Rates on other routes are higher and on some short routes with very bad operating conditions can exceed Birr 1.00 /ton km. (WB, 1996:23).

5.3 Axle Load Regulations

The Ethiopian government has pursued a policy of Axle load control since proclamation 261/1962 'Vehicle Size and Weight Regulations'. This set the permissible axle loads at not greater than 6 metric tons for the front axle and 8 for the rear axle, these were increased by proclamation 11/1990 to 8 and 10 tons respectively. A system of a permanent weigh bridge stations were set up controlled and staffed by the Road Transport Authority. Local traffic police assisted in compelling heavy traffic to be weighed and any penalty fines were collected at the local court house.

The Ethiopian Road Authority (ERA) established by proclamation 201/1962 was reestablished by proclamation 80/1997. In 1998 responsibility of axle load control was transferred from RTA to ERA since it was deemed that ERA has a direct interest in ensuring the integrity of the road network by minimizing damage to the road pavement by over loading and in collecting details of traffic and freight flown for the planning of road maintenance and upgrading and new construction.

Any rational transport policy is expected to consider two important aspects of costs savings in road infrastructure provisions. Among these savings, one aspect refers to cost savings in transport operation and the other to investment in the development, improvement, upgrading and maintenance of the road infrastructure. Another area of savings in the infrastructure is control of axle overloading, which is the most possible intervention to reduce damages to pavement, structures and maintain design life.

On the other hand, the interest of the transport industry for high capacity vehicles are imminent, for it is derived mainly from operators perception that, transport cost, which is to move commodities of various dimensions and weight spectrum in effective manner, is reduced with increasing gross vehicle weight (GVW). Freight transport vehicles are over loaded and the increasing effect on road damage will continue even under stringent axle load control mechanisms is in place between 20% and 40% of axles from heavy and articulated trucks are over loaded, to maximum load of 27.5 tons or nearly three times the legal limit (RTA, 2002:81). On the other hand there is a considerable number of lightly loaded or empty trucks running, particularly "own account' (private commercial) vehicles which do not carry back loads. However when the instances of indivisible heavy loads may occur such as heavy construction and industrial machinery and to be transported on public roads, special permits are given.

5.4 Road transport institutions

Government Agencies are involved in road Transport operations and management. Different institutional sectors are directly or in directly involved in road transport regulation control. The Ministry of Infrastructure and its institutions RTA, RTCBs and zonal departments are directly involved in regulation / administration while ERA and the RRA are involved in administration and control of road infrastructure.

Proclamation 4/1995, Which define the powers and Responsibilities of the Executive branch of government empowers the Ministry of Transport and Communications (MOTAC), now Ministry of infrastructure (MOI) to prepare draft laws and regulation for transport to facilitate the integration and coordination of all modes of transport, to regulate road transport services linking regions, to issue directives concerning the registration and inspection of land carriers, to grant operating permits, to license operators and organize the training of manpower necessary for transport.

The Road Transport Agency (RTA) was established in 1967 by order No 49/1967. Later it was reestablished in its current form under the name of the Road Transport Authority (RTA) by Road Transport proclamation No 107/1976 and by Road Transport

regulation proclamation No 14/1992. The Authority is accountable to the Ministry of Transport and communication. The power and duties of the Authority in comparison with the powers and duties of the Regional Transport and communication Bureau are spelt out in Article 7 of proclamation 14/1992. There are two levels of laws, which define powers and duties of the Regional Transport Burreaus (RTCBs). One is the "Definition of powers and duties of the central and Regional Executive organs or the "Transitional government of Ethiopia" proclamation No 41/1993. The others are the several proclamations issued by the respective Regional State Administrations defining the powers and duties of their respective Transport and Communications Burreau (RTCB)

There is a conflict between RTA and RTCBs roles and responsibilities (over lapping or lack of responsibilities). There is confusion on who should actually control the road-worthiness of inter-regional transport vehicles. Regional operators which are registered only at the respective RTCB, cannot move outside their region and are obliged to operate only in the region where they are registered, hence creating 'ketemas' of their own.

Hence to improve road transport performance in terms of operating costs, level of service, reliability, safety and being respondent to freight demand and needs, a series of actions regarding the sector general framework must be undertaken in the future.

The regulation has to focus on creating the conditions for an efficient, appropriate road transport market. The government should become the real facilitator and regulator of transport services (freight and passenger) to be appropriate and efficient. Complete liberalization of road transport market, with formalization of the privatization process of parastatals, restructuring of the major public own-account (private-commercial) fleets, must be undertaken.

Considering the 'Pros' and 'Cons' of deregulation free entry of neighbour countries transport operators would guarantee a more competitive market, better transport service, lower transport tariff and hence lower prices of goods in the market. However, opening to foreign operators to serve transit transport in competition to national operators should be pursued ensuring that all the competitors are put in the same technological level and Ethiopian operators could work for third countries.

CHAPTER SIX

ROAD FREIGHT TRANSPORT DEMAND AND SUPPLY

In this Chapter the Commercial Road Transport subsector will be treated from the point of view of Demand and supply for Road freight transport services. The present demand and supply and future demand forecast for the transport service will be established. Finally attempts will be made to establish supply and demand gap. Besides the modal competition, National freight movement and the AA- Djibouti corridor analysis will be made

6.1 Freight Transport Demand

Transport demand is the expression of the transport needs even if these needs are satisfied fully, partially or not at all. It is expressed in volume of freight or mass or ton per unit of time and space. The demand is generated by the economy, which is composed of industries which generates movements of freight. For freight transportation the demand is the function of the nature and importance of economic activities (GDP, Commercial surface, number of tons) and of modal preference.

National commodity movements considered in this study expresses the demand for freight transport, which consists the following main categories. These are:

- Export product including Coffee
- Import excluding petroleum and petroleum products
- Agricultural produce except coffee for domestic market
- Industrial products for domestic consumption all over the country.

Table 6.1 Volume of Commodities/1995/96-2004/05/

10^3 tons

Year	Export	Import	Agriculture major crops	Industry	Total	Road Transport Performance	Ton-km millions
1995/96	280.604	758.603	9279.119	1789.666	12107.992	4060.3	1,714.9
1996/97	337.791	572.698	9645.239	2184.331	12740.059	5134.3	2,070.9
1997/98	273.178	407.657	7362.671	1829.462	9872.969	5532.8	2229.9
1998/99	227.342	1145.633	8583.842	1939.456	11896.179	4810.6	1529.5
1999/00	249.409	1573.312	8890.996	2264.001	12977.719	4913.1	1785.7
2000/01	280.817	1169.489	10615.985	2323.093	14389.384	4890.2	1866.2
2001/02	404.745	1570.630	9936.178	2435.129	14346.682	5232.5	2090.1
2002/03	396.556	1421.506	7369.445	2504.067	11691.574	5272.3	2058.0
2003/04	419.221	1732.479	10356.413	2573.005	15081.118	6104.3	2913.3
2004/05	527.974	1994.865	11906.810	2644.792	17074.441	6280.4	N.D

Source: National Bank of Ethiopia quarterly Bulletin Vol.21 No.1 2005/06 (export & import)

: CSA Statistical Bulletin No.1 32-35/for Agriculture and industry

: Ministry of Infrastructure-Annual Bulletin 2004/05 for Road transport performance and ton-km.

Note: ND = No data

Of the total commodities import/export volumes form considerable share of the total consigned commodities to different centers. Ethiopian dry cargo imports as in table 6.1 have shown increase more than the pace of the general development trend in the economy. According to IMF and World Bank Analyses and forecasts, the average growth in the overall Ethiopian economy has been well over 5% during the periods 1999/00-2009/10 and nearly 4.7 during the subsequent years. (ERA; 2002) In this study growth in importation of dry cargo has exhibited an average annual growth of 10.2% from 1995/96 to 2004/05. The overall increase has shown a doubling of volume over a period of ten years (refer to table 6.1)

There is an erratic increase in import of dry cargo goods. The highest observed volume since1995/96 was in 1999/2000 totaling 1.6 million tons of dry cargo goods. Similar

volumes were registered in 2003/04 where the total volume nearing 1.8 million tons. However, the highest volume registered was in 2004/05 (Table 6.1).

The projections of exports by the IMF (15 years) and National Bank of Ethiopia (5 years) estimated coffee to grow by 4.6% per annum and by the same measurement export of oil seeds to grow by 4.0% and pulses by 6.5% and other exports to grow by 5.7% average growth.

Trends in export growth have also been erratic. In the last ten years the highest recorded export volume has been in 2004/05 with a total tonnage of 527,974 tons. During the last ten years (1995/96-2004/05), the total volume of export increased by about 6.5 percent per year. However mean annual export commodity over ten years remained 339.764 tons per year.

Of these demands agricultural produces both for domestic and export markets are by far the Largest comprising probably more than two thirds of the total demand. Trends in agricultural growth, nevertheless is more in tune with the volume and distribution of seasonal rain fall. In the last ten years the highest recorded volume has been in 2004/05 with a total tonnage of 11,906,810 and the lowest in 1997/98 with 7,362,671 tons. However the mean annual agricultural production (major crops) remained 9,394,670 tons per year.

Local Industrial products form the other major group and are known to create sufficient demand for freight transport. There is a continuous increase in industrial production where the highest volume registered was in 2004/05 nearing to 2.7 million tons. During the last ten years (1995/96-2004/05), the total volume grew by about 4 percent per year. The mean industrial production is 2,248,700 tons per year.

In its totality there is continuous increase in the total demand except a decline in 1997/98 which was 9,872,969 tons and in 2002/03 which was 11,691,574 tons which could be attributed to the decline in agricultural productions. The highest volume registered was 17 million tons in 2004/05. During the last ten years /1995/96-2004/05/ the total volume grew(increased) by about 4 percent per year, with the mean annual volume of 13,217,822 tons per year.

The ton-km is also a common measure expressing the realized freight transport demand as it compares a transport quantity with distance. Between 1995/ 96 and 2004/05 total freight transport demand increased from 1714.9 to nearly 3000 million ton km. (table 6.1) Over this period the average annual growth rate of freight transport (5.4% per year) was considerable. This growth has occurred mainly owing to the flexibility and accessibility offered by road transportation. The decrease in freight in 1998/99 reflects the reduction in agriculture and export volume. Since 2000/01, freight transport grew more than the average rate reaching to 9.3% growth per year. The demand for road transport is highly seasonal requiring a high transport capacity at the peak, especially when the transport of agricultural produce both for export and for domestic market is peaked. Seasonality of cargoes is also related to the import of fertilizers and especially food aid.

Future commodity movement is very much dependent on anticipated economic development of the country, which all depends on the government's economic policy. Based on the expectations of the growth in agriculture which initiates development in other economic sectors and assuming that the policy, strategy and development plans are to be pursued in the fullest determination, future commodity movement, more specifically agricultural production will reach to some degree of best measurable performance.

According to MOFED, the GDP growth between 1992-97 was about 7 percent. The border conflict with Eritrea sharply hit this growth in 1998 which resumed in 2000 to reach 5.5 percent. The economy had recovered in 2003/04 by registering 11.3 percent real GDP growth. During 2004/05 real GDP kept on increasing and grew by 8 to 9 percent while the 2005 estimate was 7 percent.

In this study the forecast used time series data with base year 1995/96 extending to 2004/05 .The data was collected from different sources such as CSA, MOI, RTA, NBE, According to the data there was a total of 13,217,822 tons of mean annual commodity volume made available for different end uses.

Depending on these time series data regression analysis for the development of future commodity movements has been calculated on short term forecast (five year) mid

term forecast(ten years) and long term fore cast (15 years) bases. The forecast is based on five independent variables, which are:

1. Total export volume
2. Total import volume
3. Total agricultural production of major crops
4. Total Industrial production
5. Commercial road freight transport performance.

Using exponential and linear regression models fit into the economic performance data the forecasts on future national commodity movement, and hence off take capacity of road freight transport has been formulated.

The regression models fitted to commodity production(Export, Import, Agricultural production , Industrial production) and the performance of commercial fright transport has the following form.

$$\mu_{\gamma} / \chi = y\delta^{\chi}$$

Where: y and δ are parameters to be estimated from the time series data. Denoting these estimating parameters by 'C' and 'd' respectively, we can estimate.

$$\mu_{\gamma} / \chi$$

by $y_x=Cd^x$ from the sample regression

$$y_x=Cd^x$$

Accordingly in view of the expectations of better economic performance and global environment in the future, growths in future commodity volume, which is expected to continually increase, were calculated using exponential regression models on different time scales (Annex 2 and annex 3). In the projection, the rate of population growth, political stability and rate of investment are assumed to remain the same.

Table 6.2 Future commodity fore cast (2005/06-2019/20)

In tons

Commodity	Base year 2003/04	Fore cast periods		
		2009/10	20014/15	2019/20
Export(a)	419221	612867	847595	1172223
Import(b)	1732479	4276484	8676593	17604010
Total a & b	2151700	4889351	9524188	18776233
Agriculture	10356413	12091060	13480898	15030496
Industry	2573005	3319439	4097191	5057173
	15081118	20299850	27102277	38863902

Source: CSA estimates
: NBE Quarterly Bulletin Vol. 21, No. 1
: MOI Annual Bulletin

According to the results of the model, on the short term forecast period (2009/10) a total of 20 million tons of different goods are expected to be available. While on the mid term forecast period (2014/15) and long term (2019/20) forecast period, it is expected that some 27 million and 39 million tons of commodities could be made available respectively. The overall growth over the fifteen years period (as indicated in table 6.2) with respect to the availability of commodity, the figure stands at 6.5 percent average annual growth (See Annex 2).

Export, during the short term period, is expected to grow by 7.9 percent, while the mid term and long term expectations are 6.7 percent and 6.7 percent respectively. The overall growth over the fifteen years period could reach 7.1 percent.

Import on the other hand is expected to grow by 19.8 percent in the short term forecast periods and by 15.2 percent and 15.2 percent in mid and long term forecast periods respectively. Over fifteen years period import is expected to grow by 16.7 percent (2004/05 - 2019/20).The combined growth (both import and export) is likely to be 17.8 percent in short term forecast period, while the mid and long term forecast is likely to grow by 14.3 percent and 14.5 percent respectively. The over all import and export growth could reach 15.5 percent over the entire forecast period. (Annex 4).

Table 6.3 Future commodity Annual Growth trends (2003/04 -2019/20)

Production	Growth Trends (%)			
	2003/04-2009/10	2009/10-2014/15	2014/15-2019/20	2003/04-2019/20
Export	7.9	6.7	6.7	7.1
Import	19.8	15.2	15.2	16.7
a+b	17.8	14.3	14.5	15.5
Agriculture	2.5	3.1	2.2	2.5
Industry	5.2	4.3	4.3	4.6
All categories	6.1	5.9	7.5	6.5

Note: Author's calculation

Forecast for agriculture, as projected by the model indicate that, the overall growth (2003/4-2019/20) over the forecast period will be 2.5 percent, while short, mid and long term forecast is 3.1 percent and 2.2 percent respectively Industrial production on the other hand grows with 4.3 percent and 4.3 percent in mid and long term forecast periods, while the overall growth is expected to reach 4.6 percent by the end of the forecast period (2019/20).

Generally, as indicated in table 6.3, the long term general growth will be 6.5 percent with best growth performance to be observed and the short term forecast period with values of 6.1 percent.

6.2 Freight Transport Supply (Service)

In reference to the data (table 6.1) indicating transport performance reveals that, the proportion of annual off take performance of all commercial road freight vehicles is very small. In almost all periods in the time series availability of and supply of goods produced and made available to be transported exceeded the commercial road freight transport capacity.

As indicated in the earlier chapter, the total standing off-take capacity of commercial freight transport sub-sector is 286,000 ton, while the annual demand is much higher as the figures indicate (table 6.1) (turn around trip not considered).

In 2003/04 for example, the total transportable goods produced (table 6.1) was in tune of 15081.1 ton (thousands), while off- take performance of the commercial road freight transport in the same period was only 6104.3 thousand ton, which is only 40.5 percent. The performance of the future commercial road freight transport is very much dependent on the economic development and the way it is organized. It considers the standards of the infrastructure, vehicle stock, age and capacity.

The growth of 3.3 percent in commercial road freight transport in the projection years (2005/06-2019/20) seems to mismatch the growth in the other economic sectors. During these periods the economic activities referred to in this study will attain growth rate of 5.7 percent. As the regression analysis indicates, the volume of commodity is expected to grow by 4.9 percent in the year 2005/06-2014/15 while transport service performance could only grow by 3.1 percent during the mid term forecast.

Hence, assuming that there will be no further adjustment in the structure, current levels of division of labor and current levels of specialization, the growth in future commercial road freight transport seems to pose significant problems on effort of economic development specially on export and import activities.

Such possible problems may be overcome with conditions that long-haul and short haul transport services are distinguished and focus given to international traffic which often requires higher carrying capacity vehicles operating on long distance operation. Augmenting the service through capacity replenishment may enhance the performance of the sector.

6.3 National Dry Cargo Freight Movements

National commodity movements considered in this study are composed of import (excluding petroleum and petroleum products) export, Agricultural produce (excluding coffee), and industrial products (including liquid products converted to weights to maintain measurement consistency.)

Dry Cargo movements have shown a growth of 4.5 percent in term of tons and 5.2 percent in ton-km.

Table 6.4 National Freight movements

(10^3 ton)

Year	Total Goods	Road Transport	Road Transport performance	Ton-km in millions
1995/96	12107.992	11502.592	4060.3	1.714.9
1996/97	12740.059	12103.056	5134.3	2.070.9
1997/98	9872.969	9379.321	5532.8	2.229.9
1998/99	11896.279	11301.465	4810.6	1529.5
1999/2000	12977.719	12328833	4913.1	1785.7
2000/01	14389.384	13669.915	4890.2	1866.2
2001/02	14346.682	13629.348	5232.5	2090.1
2002/03	11691.574	11106.995	5272.3	2058.0
2003/04	15081.118	14326.950	6104.3	2913.3
2004/05	17074.441	16819.219	6280.4	

Source: Statistical Bulletin 2004/05 ministry of Infrastructure June 2005.

: NBE, Quarterly bulletin

: CSA, No. 132-351

Note : indicate 95.1% of share of commercial Road freight Transport.

Whether the origin of goods is external or the movement of goods emanated from different economic sectors, all commodities made available and moved on national network by road, rail, and air transportation are considered as internally circulating goods movement. This holds true to all input, output and consumption goods where the movement forms a composite structure of national commodity movement and are indicative to the levels of sustainability of freight transport demand.

In order to determine the extent of the present supply of freight transport an extensive analysis of the movements of trucks above seven tons was prepared from the records held at weight stations. Records and information on internal traffic and commodity movements were collected from six weight stations.

There are nine weight stations used for enforcement of the existing axle Load. These stations are distributed within different locations along the main road of the network of the country (see annex 5).

Most of the surveys carried out from the stations have helped to identify the type of commodity, the origins and destinations, the volume of goods transported and the number of vehicles(see annex 6).

The survey divided commodity movements into the 21 classification shown (annex 8) and analyzed the movements between the regions and Addis Ababa and the port of Djibouti.

The results of the survey for the year 2003/04 are shown. Separate analysis for Djibouti oriented and Addis Ababa oriented flow are prepared. The commodity flows have either origin or destination at Djibouti or Addis Ababa respectively. Intra- Regional traffic is also shown.

Table 6.5 Dry Cargo Circulation 2003/04

Weight in Ton

Station	Alemgena	Holeta	Kombolcha	Modjo	Shasemene	Sululta	Total
Months							
July	10482.4	27025.3	70382.9	80115.7	7539.4	12266	207811.7
August	8987.9	30856.2	75898.	157515.4	6570.6	9526	289354.1
September	7246.3	12762.2	77842	25945.1	6310.4	7276	137382
October	9653.	21821	98850	62945.1	8058.9	10890.6	211440.6
November	11308.8	22477.1	83932	56218.0	6756.4	8938.	189630.3
December	10812.	34833.2	102894	83322.3	10147.1	10768.	252776.6
January	11562.4	34885.	86246	166099.2	9811.4	11426	320030.
February	11063.1	27721.2	10580.3	68588.4	10696.9	64724.	193373.9
March	16795.4	56008.3	114921	89750.4	8827.1	10566	296868.2
April	8453.9	36289.2	81679	74592.4	6988.7	17837	225840.2
May	12563.1	57032.9	104627	91629.2	7084.3	153427	426363.5
June	16633.5	28568.3	209010	103525.7	8383.5	141787	507908
Total	**135,561.8**	**390,259.9**	**1,116,862.2**	**1,059,488.9**	**97,174.7**	**459,431.6**	**3,258,779.1**

Source: Weight Stations

The total dry cargoes moved through the six weight stations is about 3,258,779.1 tons.(Table 6.5) Djibouti oriented movement is about 25.9 percent while Addis Ababa oriented movement is 46.4 percent and Intra regional movement 27.7 percent.

Consideration of the commodity movement with respect to traffic flows indicate that significant transportable goods converge towards Addis Ababa making it a hub for freight transportable activities. Nevertheless, what has been collected towards Addis Ababa is also redistributed to the different locations of regional states with varying volume. Thus large proportion of commodity that is Addis Ababa oriented indicates also the importance of the capital as a storage and distribution center.

6.4 Modal share of Freight (1993/94-2003/04)

Transport modes are the means by which people and freight are carried. They fall into one of three basic types namely road, rail and air. Total freight moved by the three modes increased by 108.2% between 1994/95 and 2003/04. The share of road transport increased whereas the share of rail decreased from 7% in 1993/94 to 3% in 2003/04 (Table 6.6). Prior to 1994/95 from 1988/89 to 1993/94 freight transported by rail was 299028 tons, 295,378 tons, 315,000 tons 230,000 tons, 233,952 tons respectively.

Table 6.6 Dry Cargo Freight service (1994/95-2003/04)

10^3 tons

Year sub sector	1994/95	1995/96	1996/97	1998/99	1999/00	2000/01	2000/01	2001/02	2002/03	2003/04
Road Transport	3366.5	4060.3	5134.3	5532.8	4810.6	4913.1	4890.2	5232.5	5272.3	6104.3
Rail Transport	204.6	238.7	232.1	202.3	270.0	285.3	239.3	220.0	240.0	204.3
Air Transport	340.0	31.8	32.1	38.8	31	35	23	27	39	47
Total	3605.1	4330.8	53985	5773.9	5111.6	5233.4	5152.48	5479.5	5551.3	6355.6
%Road	93.4	93.8	95.8	95.8	94.1	93.9	94.9	95.5	95.0	96.0
% Rail	5.7	5.5	4.2	3.5	5.3	5.5	4.6	4.0	4.3	3.2
% Air	0.9	0.7	0.6	0.7	0.6	0.7	0.5	0.5	0.7	0.7

Source: Mol, Annual statistical Bulletin June (2005)
: RTA Annual Report

N.B. Total and Percentage are author's calculation

The road freight transport service constitutes 95.1 percent of the total tons covered by all modes of transport. In the year 2003/04 freight transported by road was about 6.1 million tons in comparison with 0.20 million ton transported by rail.

Table 6.7 Dry Cargo Transport Performance

Ton- km in million

MODE Year	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Road	1467.9	1714.9	2070.9	2229.9	1529.5	1705.7	1866.2	2090.1	2058.5	2913.3
Rail	93.0	103.9	106.0	90.3	116.0	117.7	91.3	850	97.0	80.6
Air	119.7	112.0	129.0	147.8	116.5	91.6	82.6	82.7	157.4	209.4
Total	1680.6	1930.8	2305.9	2468.0	1762	1915.0	2040.1	2257.8	2312.9	3203

Source : MOI Annual Bulletin June 2005
: RTA, Annual Report

Road transport is easily the most important mode of freight transport. The 1994/95 data (Table 6.6) shows that 93.4 percent of the freight moved by road, 5.7 % by rail and 0.9 percent by air. Today the dominance of the road is much stronger (96%), as the road traffic has increased much more than both rail and air.

Freight traffic has increased form 1680.6 million ton-km in 1994/95 to 3203.3 million ton km in 2003/04. Such an increase has occurred mainly owing to the flexibility and accessibility offered by road transportation, which performed 2913.3 million ton-km (Table 6.7).

As regards the competitive position of road haulage the sector is largely liberalized while rail has not done enough to increase its competitive efficiency. At present road freight is in competition with rail, only on one route, that is, Addis Ababa to Djibouti. However, due to shortage of rolling stock the rail way is unable to expand its present operations significantly

Airways carry Commodities with short shelf-life and the ratio between air freighted goods and road transported goods is very insignificant that air freighted render road transport forecasts insensitive to variations in the modal split between air and road

6.5 Addis Ababa Djibouti Corridor

Since the independence of Eritrea, Ethiopia became a land locked country and access to sea ports became a major constraint for its foreign trade. Historically, Djibouti was the gateway port to Ethiopia, with most of the traffic moving by rail. In the late 1970s Ethiopia developed the port of Assab which handled the major part of Ethiopia's foreign trade until the out break of hostilities between Ethiopia and Eritrea in 1998.

In 1994/95, Ethiopia had access to three ocean ports. Assab handled 73 percent of imports and 51.7 percent of exports, while Djibouti 0.8 percent of imports and 3.2 percent of exports and Massawa zero percent of imports and exports. The total volume of imports was 1,690.516 million tons while export was 253.167 thousand tons a ratio of almost 7:1 between imports and exports.(table 6.8). Even prior to 1994/95, the international trade through Assab was significantly high with the share of Djibouti not more than one percent. Today, almost all of Ethiopia's foreign trade amounting to 563663 tons of imports and 169693 tons of exports (2003/04) is handled by the port of Djibouti. This volume could be expected to increase, and conceivable even more if the GDP Growth translates to higher growth in trade.

Today the port of Djibouti handles almost all of the import/ export trade. The Ethiopian Foreign trade flows also use other routes or corridors such as Port Sudan, and Berbera, (figures I and II).

Transport corridors respond to present mobility needs to foreseeable economic development and geographical connection needs. Addis Ababa- Djibouti corridor represents the main national corridor connecting the port of Djibouti to the capital. It is a bimodal corridor: road and railway.

There are two principal road routes connecting Djibouti and Addis Ababa. One of them passes through Nazreth and Awash and the other passes through Kombolcha. These two routes join near mille and the section from Mille to Djibouti is common to both routes. The Djibouti- Awash Addis Ababa route has a distinct advantage over Djibouti- Kombolcha Addis Ababa due to differences in terrain. The corridor analysis in this study however, refers to the Addis Ababa- Awash- Djibouti road route.

The road is 909 km long passing through Awash valley which has high agricultural potential. Nazareth, Modjo and Deberzeit are important towns enroute which are bristling with industrial activity and serve as distribution centers to and from southern parts of the country.

Table 6.8 A.A Djibouti Corridor Import/Export

In tons

Trade	1994/95	1995/96	1996/97	1997/98	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
1. Import										
1.1 Sea ports	1,242,833	1,304,243	777,027	1,155,187	573,001	606,625	496,728	619,217	334,309	563,663
1.1.1 Assab	1,234,481	1,254,711	758,626	900,397	-	-	-	-	-	-
1.1.2 Massawa	-	-	-	-	-	-	-	-	-	-
1.1.3 Djibouti	8,352	49,532	18,401	254,795	573,001	606,625	496,728	519,217	334,309	563,663
1.2 Via Air ports	13,375	13,569	11,067	12,121	10,966	8,411	6,496	8,214	4,6000	7,706
1.3 Via post office	20	18	16	22	15	20	13	15	9	13
1.4 Other transit points										
1.4.1 Dire Dawa	96,123	49,052	37,799	62,349	45,313	53,564	105,974	12,917	36,233	37,318
1.4.2 Nazareth	27,280	40,280	48,220	116,382	50,083	21,450	24,558	22,269	21,993	21,275
1.4..3 A/Ababa Lagar	281,086	347,905	240,761	232,527	268,068	170,006	596,438	761,628	547,647	527,661
1.4.4 Mekele	6,550	4,789	3,166	1,371	56	-	-	-	-	-
1.4.5 ,Moyale	23,249	28,208	26,621	15,706	10,213	9,442	9,026	6,093	6,360	5,221
Sub-Total (1.4)	434,288	470,801	356,567	428,335	373,733	254,562	735,996	802,907	612,233	591,475
Total	1,690,516	1,788,631	1,144,677	1,595,665	957,715	869,518	1,239,233	1,430,353	1,285,460	1,162,857
2. Export										
2.1. Sea ports	139,068	164,841	242,146	201,149	204,346	117,000	121,046	190,371	168,070	169,693
2.1.1 Assab	130,846	157,813	221,332	146,625	-	-	-	-	-	-
2.1.2 Massawa	-	-	-	-	-	-	-	-	-	-
2.1.3 Djibouti	8,222	7,028	20,814	50,680	204,346	117,000	121,046	190,371	168,070	169,693
2.2 Via Air ports	10,413	13,114	10,539	11,815	20,592	7,696	4,265	3,122	4,856	7,843
2.3 Via post offices			-	-	-	-	-	-	-	-
2.4 Other transit points				15	-	-	-	-	-	-
2.4.1 A/Ababa Lagar	19,562	19,638	62,931	45,676	34,957	163,274	162,485	177,212	170,923	186,526
2.4.2 Nazareth	37,625	31,491	34,933	49,304	56,001	76,977	100,980	174,907	149,685	112,672
2.4.3 Dire Dawa Lagar	35,499	29,424	27,984	16,600	22,442	17,467	18,197	18,517	16,332	21,554
2.4.4 Mekele	11,000	4,505	154	27	-	-	-	-	-	-
2.4.5 Moyale			5,347	6,901	353	30	-		-	-
Sub total (2.4)	103,686	85,058	131,349	118,508	113,753	259,447	281,662	370,636	336,940	320,752
Total	253,167	263,013	384,034	331,487	338,691	383,444	406,973	564,129	677,936	498,288
Grand Total	1,943,683	2,051,644	1,528,711	1,927,152	1,296,406	1,252,962	1,646,206	1,994,482	1,963,396	1,661,145
Rail Import & Export	156,913	176,309	174,052	161,000	190,000	214,800	189,829	168,000	194,000	184200
Rail%	8.10	8.6	11.4	8.4	14.7	17.1	11.5	8.4	9.9	11.1
Road%	91.2	90.7	87.9	91.0	84.4	82.2	88.1	91.2	89.9	88.4
Air	0.7	0.7	0.7	0.6	0.9	0.7	0.40	0.4	0.2	0.46

Source: MOI Annual Statistical Bulletin (2005)
Note: Percentage is author's calculation

An alternative route between the port of Dibouti and Addis Ababa is an old and inefficiently run railway. The Ethio- Djibouti railway at a distance of 781 km carried 204,000 tons of freight in 2003/04. Export traffic accounted for 75, 7000 tons, while import traffic represented 108,100 tons. This represented about 11 percent of all Ethiopian export and import.

As the country's imports are significantly greater than exports, long distance road traffic is unbalanced. As a consequence, efficient transport operation is more difficult to achieve and the average load factor of trucks is low, about 60%.

According to the study made by Profabril at present, Djibouti receives about 70% of the transport capacity to clear the port (700 trucks on average per day versus a need for 1000).The missing 30% would be supplied by lowering vehicle turn around time or increasing truck capacity by adding more vehicles to the fleet or by replacing smaller vehicles with larger vehicles.

The Total Ethiopian International (import/export) traffic reached about 2.5 million tons in 2004/05.The main volume of imports and exports over the last ten years are shown in table 6.9 and 6.10. This highlights the role played by the corridor.

Table 6.9 Volume of exports by major commodities

(In tons)

Year	coffee	oil seeds	hides& skins	pulses	meat & meat prod.	fruit & veget	sugar	Gold	Live animals	Chat	pehol pet.prod	Bees wax	Total
1994/95	82198.6	12132.4	8386.5	25782.6	4404	19485.5	10.0	-	770.6	4073..3	159744.7	3000.6	319,988
1995/96	97578.8	7831.7	7546.8	28968.7	950.4	19003	-	-	182.5	3698.3	114514.4	329.8	280604
1996/97	123165.5	14069.3	8648.3	30468.2	1716.4	2834.2	13150	-	1304.7	5031.2	118089.8	313.7	337791
1997/98	120049.6	66553.7	7851.7	30909	1529.4	17010		-	1323.6	5980.9	20975..9	994.8	273178
1998/1999	101232.3	51366.3	5824.3	293832.6	2078.3	19394.4	6643.2	-	918.9	9702.1	-	349.7	227342
1999/2000	116558.4	43130.8	8603.3	23527.3	1976.8	20734	17208.8	2.5	1766.3	15683.6	-	216.9	249409
2000/2001	99134	55051.4	12409	26861.2	869.7	17029,7	57004.8	4.8	214.1	11927.7	-	311.0	280817
2001/2002	110346.9	76604.4	10334.5	109,227.5	662.5	29695.8	58041.4	4.8	165.7	9376.7	-	285.0	404745
2002/2003	126127.6	82801.2	10545	66154.4	1722.2	25304	77000	5.0	607.1	6105.6	-	184	396556
2003/2004	156408.6	105945.5	9401.5	73279.8	4007	368414	16016	4.5	3141.4	13739.5	-	433	419221
2004/05	161060.6	140736.8	15402.9	121653	7274.5	37906.3	15001.1	4.1	9125.9	19425.9	-	382.5	527,974

Source: NBE., Quarterly Bulleting Vol. 21 No1 2005/06

Table 6.10 Volume of Imports by Major Commodities Groups

In tons

Year	food &live animals	Beverages	Tobacco	Chemicals	Fertilizers	Medical pharm	Soap& polish	Rubber prod.	paper & paper manuf.	Textiles
1994/95	622468.5	478.7	696	22459.1	218133.1	4037.9	9498.4	10009.4	6264.8	17505.4
1995/96	322279.3	1589.7	489.6	33876.5	115377.2	2109.7	17644.6	14374.7	7835.1	16501.
1996/97	13068.9	1175.9	232.7	15796.1	101305.4	3662.9	30209.4	23098.5	22807.	42304.8
1997/98	30835	1666.7	350.6	16769.7	36225.9	2167.7	18148.7	14799.5	20312.6	26681.1
1998/99	225025.9	3170.5	693.2	121440.1	175442.2	6260.4	23958.4	15148.1	160611.8	39073.2
1999/2000	391278.7	2618.3	933.1	34236.7	233847.8	3125.8	18317.2	53466.7	413422.2	71001.9
2000/2001	420439.3	1746.6	1006.0	30294.1	79524.9	2820.2	28859.6	22398.6	100301.6	20680.2
2001/2002	738091.7	1079.4	1784.2	18907.8	302409.4	4136.9	25648.9	175834	32216	26630.1
2002/2003	645141.6	1252.6	724.4	19577.6	251258.6	3502.5	27847.2	18395.7	359258	33900.4
2003/2004	691588.7	1433.2	738.4	23114.6	382673.3	8119.1	33670.2	21253.7	46047.8	40618.7
2004/2005	576638.2	1806.5	919.7	19232.2	352064.6	4580.7	42352.6	26637.1	52811.6	90311.5

Continued

Year	Clothes	Glass & glass ware	Metal & metal wanfe	mac. & air craft	Road Motor vehic.	Eletrcal materials	Grain	Telcom appara	Total
1994/95	1581.9	2039.5	116919.2	28712.2	32497.8	83301.9	590328.1	82.4	1,176,686.2
1995/96	4808.1	5878.8	119762.	42304.6	41188.0	12487.6	313282.	96.4	758603
1996/97	7500.8	6327.6	194750.1	24358.1	38937.	46950.6	4019.3	131.1	572698
1997/98	4685.1	6170.6	163616.8	24115.4	20482.3	20525.1	22928.5	104.6	407657
1998/99	6886.1	10194.2	217971.	28591.4	73864.5	36830.9	219044.	470.	1145633
1999/2000	10177.6	10486.	198765.7	28817.5	80219.1	21369.7	360118.1	1232.4	1573312
2000/2001	20562.4	15254.5	261843	26964.1	91784.3	24421.1	360317.7	20588.3	1169489
2001/2002	19361.3	11900.4	273464.6	23962.2	47917.1	25206.4	693514.9	329.9	1570630
2002/2003	18225.4	13799.4	256989.9	29572.1	34348.	29328.9	620999.6	716.3	1421506
2003/2004	30837.4	20092.7	293701.2	38653.1	41688.9	54920.2	628811.6	3327.3	1732479
2004/2005	26917.3	22217.6	522191.9	52520.9	46005.1	57905.3	534024.1	89751.9	1994865

Source: NBE Quarterly Bulletin vol/21No1, 2005/06

Note: grain is included in food and live animals.

Freight movements between Addis Ababa and Djibouti over the two routes in this main transport corridor is considerable and represents about 47 percent of the total rail and road freight movement in the country. Total freight moved by both modes in the corridor

itself was 1,496,675 tons in 1994/95 and in 2004/05 the total traffic volume was about 2.5 million tons. The road inland to Addis Ababa is the route over which most of this road moves to and from Djibouti and is thus clearly the transport backbone of the country.

Recent studies indicate that the total international traffic to and from Ethiopia could increase to about 5 million tons by 2010. The projection in this study also shows similar figures.(Annex 2)

The pattern of traffic shows that long distance goods traffic predominates over major part of Addis Ababa- Djibouti road. Though reliable quantitative estimates of distribution of imports are difficult to obtain, data obtained from Ethiopian Customs Authority indicated that over 90 percent of all traffic is cleared at Addis Ababa, as given in the table 6.11

Table 6.11 Imports by clearing stations (petroleum not included) (2004/05)

Location	**Addis Ababa**	**Nazareth**	**DireDawa**	**North**	**Total**
Volume in Tons	1,871,183	41892.2	63835.7	17953.7	1,994,865
%	93.8	2.1	3.2	0.9	100

Source: Ethiopian Customs Authority,

Profabril undertook origin- destination road traffic studies on the Djibouti side in 1999/2000, which indicated that there are 600-660 trucks and trailer units moving between the port and border daily. The study report made by the European commission in July 2003 also indicated that the 2002 traffic volume on the road are:

- Addis Ababa- Debrezeit about 7500 Vehicles per day including 47% of trucks.
- Debrezeit- Nazareth about 3000 vehicles per day including 53% trucks
- Nazareth-Awash about 1200 vehicles per day including 73% trucks, which shows more than 700 trucks per day use the road to transport Ethiopia's import and export

Table 6.12 Freight Movements (Dry Cargo) 2003/04

No	company	**Fleet size**			**Total capacity**	**Total Fright moved in tons**		**% share**
		Truck	Trailer	Semi-trailer			Export/Import tons	
1	Bekelcha	-	-	162	4930	145,393,35	145393.35	100
2	Comet	66	48	95	4442	104320	99330	95.2
3	Shebele	101	-	-	3030	88725	84288.75	95
4	Tikur Abay	108	109	-	4104	187248	138427.4	73.9
5	Trans Etho.	-	201	-	7035	300156.4	155690.5	51.9
6	Walia	220	208	50	7290	218700	-	-
7	Tana		232	30	10350	322800	271520	84.1

Source: Transport companies.

In this study, based on the data from major transport companies (Table 6.12) it is estimated that about one half of the total fleet operates on the Djibouti corridor. The large private transport companies generate the majority of their revenue on the Djibouti corridor. For some of them the proportion reaches 70% of their total business. However, it is significantly marked here that the parastatals control the Import/Export market for they generate more than 95% of their business on the Djibouti corridor.

In summary, the total transport demand has grown from 12 million tons to 17 million ton in a period of ten years. There has been a close link between growth inroad transport demand and economic growth. Assumptions for economic growth has been the bases for forecasts of freight traffic.

The transport demand expressed in terms of ton-km also followed economic development Between 1995/96-2004/05 the total freight transport demand has increased from 1714.9 million ton-km to about 2913.3 million ton-km. Such increase has occurred mainly owing to accessibility offered by road transport.

The road freight transport service constitutes more than 90 percent of the total tons covered by all modes of transport. The total road freight traffic increased continuously but without satisfying all the demand for the transport performance has not exceeded 50%. Even along the Addis Ababa –Djibouti corridor where major Ethiopia's international trade is handled, the imbalance between import and exports has led to inefficient vehicle utilization due to empty running of trucks.

As it concerns the transport offer, efficient number of vehicles and loading capacity is not available to meet the coming demand.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

7.1 Conclusion

Transport is an essential part of human activity and economic development. It is regarded as an engine of growth for it propels all facets of socio-economic activities. Thus, a good transport system is essential to support the growth and development of other sectors of the economy such as agriculture, trade (domestic and international) and industry.

Ethiopia, with a land area of 1.14 million square kilometers and an estimated population of about 75 million (2004/05) is highly dependent on road transport. Among the different transport modalities, the dominant mode of transport is road transport, which plays a pivotal role in supporting economic and social development. Road freight transport plays a significant role within the economic development of Ethiopia in terms of national distribution of goods as well as facilitating international trade.

The internal road transport and the road connections to transit ports are asked to solve the basic issues of the Ethiopian economy. The increase of agricultural production is critically dependent from the timely import and distribution of fertilizers. The good distributions from the producing areas and ports to consuming areas need efficient connection. The capacity for exports of coffee and other agricultural products and manufactured products from urban to rural areas depend on road freight transport.

Even if the road freight transport is recognized as the backbone for the economic development of Ethiopia, assuring 95% of motorized movements of freight countrywide it appears to be still not respondent to the needs because of infrastructure conditions, and transport organizations.

In this study, attempt has been made to give an overall direction in the development of the sector to current and future expectations. It provides an overview and background to the sectoral performance of the commercial road freight transport economy and future

demands. It has been observed that commercial road fright transport is performing under difficult conditions due to infrastructure, regulatory and vehicle problems.

The RSDP programme, launched with the assistance of major donors will finance the rehabilitation of track roads, major links and regional roads to ensure road conditions in the future. A total of 10895 km Federal and Regional roads have been constructed and rehabilitated until June 2004, expanding the network to about 36500 kms.

However, with an estimated population of more than 75 million spread over a territory of more than one million square kilometers, Ethiopia can count on a road network of only about 36500 km. which 75% are unpaved or gravel roads. The road network is limited in extension Transit roads from ports and internal transport infrastructure are very limited and can directly serve only a part of the territory (with a density of only 24 km per 1000 square kilometers 0.34 km. per 1000 inhabitants). Substantial part of the country lacks all weather connection leaving the majority of rural population still to rely on head porterage and animals to access to the nearest road.

The condition of the present road network is very poor with 78% of the network needing rehabilitation. This coupled with the limited extension has low standard and difficulties in handling the growing transport demand. The efficiency and adequacy of road transport is a function not only of the road network but also vehicle availability and sustainability. Roads are of no use without road vehicles.

According to RTA registered data, the vehicle fleet in Ethiopia totals around 146,807 vehicles in 2003/04. Dry cargo trucks are 48761 equal to 33.4% of the total fleet. Those strictly commercial road freight transport establishments constitute some 21395 vehicles.

The average growth of registered vehicles between 1989/90 – 2003/04 has been equal to 5% per year. But after the liberalization of the market the annual increase has reached a 10% value. However, this fleet is quite small for the size and population of Ethiopia,. It corresponds to an average vehicle ownership of less than two vehicles per 1000 persons.

Among the total dry cargo vehicle size 74.35% constitute vehicles with off-take capacity of less than 12 tons while supposedly economically beneficial vehicles with capacity more than 12 tons are only 9418(25.3%) indicating vehicles with higher capacity is still in short supply. The total road freight traffic has increased but without satisfying all the demand.

Commercial road freight transport accounts for about 95% of Ethiopian cargo movements. The freight transport is carried out by a mixture of private commercial and government institutions, to cater for the growing demand of freight in the movement of export, import and domestic cargo. This presupposes the availability of vehicles with lower age spectrum and high carrying capacity. The combined stocks of freight transport vehicles in Ethiopia, however, have an average age of well over 15 years and the commercial freight transport vehicles share that same age spectrum. Hence, the sub-sector suffers from old age of vehicle fleet and small carrying capacity.

Commercial road freight transport service is provided by state owned enterprises as well as private operators. The fleet run by state owned enterprises is generally of higher capacity (consisting of heavy trucks) and operating on long routes than that of the private operators. The commercial road vehicle fleet carried about 6104.3 thousand tons in 2003/04 resulting in 2913.3 million ton-km.

Dry cargo freight transport industry is dominated by three concentrations of commercial operators. One is the parastatals and associated. The Associated vehicles are old, underutilized and a large number serves only short distances mainly with low capacity and with load factor less than 60%. The others are Transport Associations and share companies. The three together constitute more than 97 percent of the commercial transport capacity in the country.

The structure of the commercial road transport industry is not efficient. The market is skewed by the excessive presence of government activity (own-account fleet, parastatal companies). In fact, the market has been liberalized in terms of entry/exit routes, tariff freedoms but complete privatization and deregulation are needed to avoid imperfect

competition due to the presence of an oligopolist power of parastatals, associations and share companies.

The freight transport market in the country is characterized by the predominance of the import/export trade, by the scattered origin/destination of agricultural input/output, distribution of industrial products for domestic market and by the seasonability of transport demand. The demand for transportation increased further as a result of both growing export and the growth in the internal economy and imports.

Ethiopian international transport/transit transport is represented almost entirely by import/export passing through ports transiting through neighboring country (Djibouti, Sudan, Kenya, Somalia or Eritrea) but presently originating mainly from/to port of Djibouti. In 2004/05 transit transport accounted for 2.5 million tons with a marked prevalence of imports over exports.

The AA-Djibouti corridor is the only road route from the port of Djibouti (The main international inlet and outlet). The port of Djibouti will keep the leading role in handling Ethiopian trade if it offers cheap, efficient and rapid service in comparisons to other ports including Eritrean ports of Assab and Massawa if they will be available again.

The potential transport demand on the Djibouti corridor could be regional trade between Addis Ababa and Djibouti, the foreign trade with Djibouti and the transit of the Ethiopian foreign trade with third countries.

However, as the country's imports are significantly greater than exports, long distance traffic is unbalanced and efficient transport operation become difficult due to empty running.

In view of future expectation commodity movement will increase in volume so does the overall economic performance. In the short term period a total of 20.3 million tons of different goods were expected to be available. On the midterm and long-term periods 27.1 million and 38.9 million tons of commodities would be made available.

The growth of commercial road freight transport in the projection years seems to mismatch the growth in the other economic sectors. During the reference periods the economic activities referred in this study will attain a growth rate of 5.9% during the midterm forecast (2009/10-2014/15) while road transport service could only grow by about 4%.

The other area of attention is the policy and regulation of road freight transport. Prior to 1991, Commercial road freight transport service in Ethiopia had been highly controlled and the operation excessively regulated by the government. Tariffs were set and enforced without the considering the need for investment and the changing operating costs. The controls were discouraging the way vehicles are allocated and dispatched to various localities.

Being aware of this situation in the country the government FDRE has introduced new transport policies that allow free competition in the commercial activities of the sector. Substantial deregulation occurred in 1992 (Proclamation 14/1992 which is now replaced by Proclamation 468/2005) with the official abolition of 'Ketena' systems, abolition of tariff control over dry cargo and starting the privatization of the State Corporation.

However, in terms of commercial transport the market liberalization has not brought substantial increase of new private companies operating in freight transport. Private operators are impeded to enter the market by the three major transport conglomerates (parastatals and associated, association and share companies) which tend to protect their market share creating Ketena like structure. The role of foreign capital investment in the transportation sub sector is extremely restricted.

7.2 Recommendations

As the economy grows, there is a continuing increase in the need for transport. Modernization of agriculture requires supplying tools, machinery and fertilizers to rural farms, and moving food and other products to consumers.

Increasing industrial production means bringing together greater volume of finished goods to consumers. Expanding output may be accompanied by an extension of the area from which materials are assembled as well as the area from which the increasing production is marketed. The total international trade to and from Ethiopia is also growing.

The demand for road freight transport is estimated to increase notably in the future. Enlarging the market and making it more competitive will attract private investment and enhance service efficiency.

The road freight industry in Ethiopia will need a major restructuring relative to its composition, regulatory and institutional environment in which it functions. The focus of attention shifts to institutional issues such as economic regulation of road transport services, the role of state owned trucking enterprises, credit and financial policies for the road transport industry, road network development and maintenance of road infrastructure.

The ground work for new policy and regulation has been laid down with promulgation of market driven economic laws, general tariff liberalization and the initial process of downsizing the public enterprises. But some still remains to be accomplished, to respond to the new economic policy. Hence, in order to achieve sustainable mobility of goods in the country the following recommendations are in order:

- Reorient the economic priorities by emphasizing road network development better construction quality and rehabilitation of existing road infrastructure.
- Improve internal connectivity within the country to reduce the presently Addis Ababa centered road system.
- For freight the development of truck fleet with expanding economy and freight volumes is important. Trucks have to become of lower age spectrum, more specialized with the share of standard two axle truck decreasing and the share of both light commercial vehicles (LCVS) used for speedy local distribution and heavy (articulated) trucks with higher off take capacity used for long distance transport increasing their shares.

- Measures to easy entry into the market and to provide incentives for the private sector, which include tax exemption, provision of credit and special financial help to the private sector to help replace and restructure their vehicle fleet is necessary.

- Complete deregulation of the entire market with liberalization of tariffs bringing it in line with demand and supply. Effective privatization of parastatal enterprises and withdrawal of public sector from provision of services which the market can better fulfill is suggested to be necessary.

- Abolish ketena like structure created by Regional Transport Associations.

- Review present road transport regulations to guarantee safer road transport and improve road signs and markings.

- Develop freight forwarding agents to increase the efficiency of the road freight transport industry ensuring a good flow of market information between transporters so that empty running can be kept to a minimum.

- Harmonize the axle load regulations and management with neighboring countries regulations, standards concerning road freight transport and open the road freight transport market for foreign operations.

BIBLIOGRAPHY

Abraham, Gunther. (1982) The Impact of Roads on Regional Development: In Proceedings of the 7th International Conference of Ethiopian Studies. Lund.

Acil Tasman. (2004). Trucking-Driving Australia's Growth and Prosperity. Augus.

ADB. 1999. Iinfrastructure Development in Africa. Oxford University press.

Addis Ababa Chamber of Commerce. (1995). Proposal of Commercial road Transport Tariff. Addis Ababa.

Addis Ababa Chamber of Commerce. (1988). Report on Private Participation on Freight Transport Service. Addis Ababa,

Alula Abate. (1982). Urbanization and regional Development in Ethiopia., Paper Presented for the Seminar on Regional Planning in Ethiopia. Ambo.

Atnafseged Kifle. (2003). Axle Overloading control in Ethiopia. Addis Ababa.

Atnafseged Kifle. (2001). Road Freight Transport in Ethiopia: the Case of Transit Transport. Addis Ababa,

Adler, Hans A. (1996). Evaluating Transport Projects: Finance Development.

Bayou Mulat., (1992). The commercial road Transport Sector in Ethiopia: Performance, Problems and Future Prospects. Paper submitted to the First Annual Conference on Ethiopian Economy, Addis Ababa.

Bellew Dagnew. (2004). The Performance Problems and Prospects of Ethio-Djibouti Railway with Special Emphasis on Freight Transport. Thesis. Addis Ababa University.

Berry, B.J. (1961). Basic Patterns of Economic Development in N. Ginsburg ed. Atlas of Economic Development. Chicago: University of Chicago Press.

Bert, Helmsing. (1997). Joaoo Guimaraes., Locality State and Development. Institute of Social Studies..

Cole, Stuart. (1996). Applied Transport Economics. London.

COMESA., (2000). The Role of Regional Transport Infrastructure in a Free Trade Area. Lusaka.

Coyle, John J, Bardi Edward J, Novack Robert A.. (1994). Transportation. West Publishing Company

Creightney, Cavelle D. (1993). Transport and Economic Performance. Washington..

CSA., (2003). Statistical Abstract 2005. Addis Ababa: .

_____., (2003).Transport and communications Statistics. Statistical Bulletin No. 286. Addis Ababa.

_____.,Area and Production for Major Corps. Nos. 132, 171,189,200,227,245,351.

_____., (1999 and 2004) Report on Large and Medium Scale Manufacturing and Electrical Industries Survey. Nos. 210(1999) and 321 (2004).

Donald, F. Wood and James C. Johnson. (1989). Contemporary Transportation. New York:.

ECA (2000). Report of the Twelfth Meeting of the conference of the African Minister of Transport and Communications.

Ethiopian Customs Authority (ECA). (2005). Ethiopian Foreign Trade: Publication of Planning and Research Service (2004/05). Addis Ababa.

Esra, Bennathan, Julie Fraser and Louis S. Thomson. (1992). What Determines Demand for Freight Transport. Washington: 1992.

Ethiopian Road Authority (ERA). (2002). Network Analysis. Draft final Report. Addis Ababa.

_____,(2004). Road Financing Studies in Ethiopia. Addis Ababa: 2004.

_____. (1995). Road Sector Development Programme (consultation Report). Addis Ababa.

FDRE. (1995). Federal Negarit Gazeta. Proclamation No. 1.

, Road Sector Development Programme II (2002-2007). Addis Ababa: 2003.

European Commission., (1994) Comparative Evaluation of Existing, alternative and complimentary Transport Links along the Djibouti corridor. Addis Ababa..

ETC and PTC., (1988). Problems of Private Sectors Participation in the road Transport Sector. Addis Ababa.

Hagget P., (1972) Human Geography. A Modern Synthesis . London: Metheun.

Hegie, Ian G., (1998). Commercial Management of Financing roads. Washington.

Hertz, Susane., (1993). The Internationalization Process of Freight transport companies. Stockholm.

Hilling, David., (1996). Transport and Developing countries. London.

.Hine, J.L., A., (1997). Comparision of Freight Transport Operations in Tanzania and Indonesia.

Hine J.L, A.Barton, C. Guojing and W.Wenlong., (1995). The Scope for Improving the Efficiency of Road Freight Transport in China. Sydney.

Hirchman, A.D., (1958). The Strategy of Economic Development, Yale University Press.

Hefmeir, R (1973). Transport and Economic Development in Tanzania. Info-Institute.

Hoyle, B.J. (1973). Transport and Economic Growth in Developing countries: the Case of East Africa in B.J. Hoyle (ed.) Transport and Development. The Macmillan Press.

Hughes & Jorgenson Associates (1983). Road Transport Study: Transport Demand Freight. Addis Ababa.

Jorgenson, Roy. (1983) Road Transport Study: Transport Demand General and Passengers. Addis Ababa.

Kanafani, Adeb.(1983). Transportation Demand analysis.

Kinfe Abraha GebreEgziabher. (2002) , Basic Statistics: a Text Book for Quantitative methods II. Mekele.

Louis Berger S.A. (2003) Pre-feasibility Study of the Regional transport Section in the Berbera Corridor. Addis Ababa.

Mekete Belachew.(1983). Road Transport in Ethiopia: an analysis of Public bus Trip flows. Ethiopian Journal of Development Research, Vol. 7-5. Addis Ababa.

Mekonen Tesfahunegn.(1986).,, The Development of the Road Transport Network of Ethiopia. A Geographical Study. Addis Ababa University, Thesis.

Mekoro Erose.(1998) Road Freight Transportation and Physical Distribution system in Ethiopian Economy. Thesis, Addis Ababa University.

MOET. (2000). Feasibility Study of Road Arta – Yaboki-Galafi-Dobi: final Report. Djibouti.

MOFED. (2002). Ethiopia Sustainable Development and Poverty Reduction Programme. Addis Ababa.

MOI..(2004). Annual Statistical Bulletin (2002/03). Addis Ababa: February.

MOTAC. (1983 E.C). A Tariff Study for Commercial Road Transport Vehicles. Addis Ababa.

____, (1990). Transport and communication: Statistical Bulletin. Addis Ababa.

NBE.(2001). Annual Report 1999/2000. Addis Ababa.

_____.(2004) Annual Report 2002/03. Addis Ababa.

_____.(2005).Quarterly Bulletin, vol. 21, No. 1

Pawson,Erick.(1975). The Turnpike revolution: A Study in the Innovation Diffusion of Transport Models. London: Parger.

Peters, Hans J. (1986). Transportation and Society in the Institute of Transportation Engineering Transportation and Traffic Engineering. Handbook(2nd ed.).

Poul, Ove Pederson. (2001) .The Freight Transport and Logistical system of Ghana. Copenhagen.

_____.(2002). Zimbabwe's Freight Transport and Logistics system. Copenhagen.

Rail India.(1986). Techno-Economic Feasibility Study of a Transport system on Addis Ababa – Assab corridor, vol. I. Addis Ababa.

Rites.(1986). Ethiopia: Transport corridor analysis, vol. II. Addis Ababa.

Robert, c. Lub.(1981). Transportation: the domestic System. Virginia.

Rodrigue, Jean Paul.(2994)., Transport supply, Demand and Travel.

RTA (2004). Draft Contract for National Transport Master Plan Study. Addis Ababa.

_____. (2000). Study on road Transport Regulation Survey Report. Addis Ababa.

_____. (2002), , Study on Road Transport Regulation. Addis Ababa:.

_____.1983). Tariff Determination in Road Transport Study, final Report Vol. 4. Addis Ababa.

RTA-GTZ.(1996). A Strategy for Ethiopia's road Fright Transport Sector. Addis Ababa.

Sheggen Fan and Connie Chang-Kang.(2004).Road Development, Economic Growth and Poverty Reduction in China. Washington.

SIDA.(1987). The Future of Ethiopia's Relief Transport fleets, Strategies and Policy Options. Addis Ababa

Simon, David.(1996). Transport and Development in the third World. London.

Smith, Adam.(1997). The Wealth of Nations. Hamon Watt Penguin.

Sumila, Gulyani.(2001) Effects of Poor Transportation on Lean Production and Industrial Clustering, Evidence from the Indian Auto-Industry. Washington.

Tassew Woldhanna and Walter Eberlei. (2004). Pro-poor budgeting and the role of Parliament in the Implementation of PRSP in Ethiopia. Addis Ababa.

Tefera Mengesha and Alemayehu Ambo.(1996)., The Management and financing of Roads in Ethiopia(Proceedings of Seminar Paper). Addis Ababa.

UNECA.(1987). Sub-sectoral Strategies road and road Transport: Second UN Transport and communication Decade (UNTACDA II) 1978-88. .

_____. 2002). Third and final Evaluation Report of the Second United Nations Transport and communication Decade in Africa 1991-2000.

_____. (2001) Trans-East African Highway (Cairo-Gaberone).

USAID. ((1996). Comparative Transportation Cost Analysis Study. Addis Ababa.

Volgt, F. (1997). Transportation and Regional Policy: Some General Aspects in W.A.G. Blonk (ed.) Transport and Regional Development. Sakon House.

Walpole, Ronald E. (19868). Introduction to Statistics. London.

WB. (2002). Can Africa Claim the 21st Century. Washington.

_____. (2001). Eonomic Analysis of Investment Options, Analytical Tools and Practical Applications. Washington.

_____(1987). Ethiopia: Recent Economic Development and Prospects for Recovery and Growth.

_____.(1986). Ethiopia: Transport Corridor Analysis, Operational Improvements and Investment Options. Vol. I, WB.

_____. (1989). Ethiopia: Transport Project Report. Addis Ababa.

_____(1998). Staff Appraisal Report : Eastern Africa Department,

_____. (1996). Transport Corridor Analysis Operational Improvements and Investment Options.

_____. (1996). Transport Sector Memorandum. Ethiopia, Addis Ababa.

____.(2000). World Development Indicators. WB.

WBI. (2000). Privatization and Regulation of Transport Infrastructure Guidelines for Policy Makers and Regulations. Washington.

____.(2000). Transport Development in China. Washington.

WSP and TRL.(2000). Axle Load Management in Ethiopia. Vol. Addis Ababa.

udassie Yohannis.(1997). Eritrean Transport Sector Study (ETSS). Asmara.

Yohannes Hankore.(1998). The Development Problem of road Transport in Ethiopia. Thesis. Addis Ababa University.

Yongston, A.J.1967. Overhead Capital: A Study in Development Economic, Edinburgh University Press,

Annex 1 Road Network in Ethiopia and selected African countries (1997)

Road Densities

Country	Land area (1000 sq area)	Population (million)	Road Net work (0'000 km)		Main		Total	
			Main	Total	Km of road per 1000 Pop	Km road 1000 Sq Km area	Km of road per 1000 Pop	Km of road per 1000 Sq km of area
Angola	1247	12.0	23570	72021	2.0	18.9	6.0	57.7
Cameroon	465	13.9	12736	50308	0.9	27.4	3.6	108.2
Chile	1260	7.1	47704	28704	0.7	3.7	4.0	22.7
Dr Congo	2267	46.7	50000	132400	1.1	22.1	2.8	58.4
Ethiopia	1100	59.8	15769	27112	0.3	143	0.5	24.6
Kenya	569	28.6	6554	67181	0.3	11.5	2.4	118.1
Madagascar	582	14.1	8430	29905	0.6	14.5	2.1	51.4
Mali	1220	10.8	13004	16211	1.3	10.7	1.6	13.5
Mozambique	784	16.6	4371	25468	0.3	5.5	1.5	32.5
Nigeria	911	117.7	62800	193200	0.5	68.9	1.6	212.1
South Africa	1221	40.9	20000	525927	0.5	16.4	12.9	43.7
Sudan	2376	27.7	8322	23162	0.3	3.5	0.8	9.7
Tanzania	884	31.3	28000	63000	0.9	31.7	2.1	71.3
Zambia	743	9.4	17051	64551	0.5	22.9	6.9	20.9
Ecowas	6139	208.0	173164	430390	0.8	28.3	2.4	70.1
Comesa	5244	161	243350	64094	0.4	12.2	1.5	46.4

Source: World Bank, SSATP Data Base

Annex 2 Forecast of commodity Production(2005/06-2019/20)

year	Export	Import	Agriculture	Industry	Total	Road Transport performance
1994/95	313.325	1176.686	7041.799	1616.208	10148.018	3366.5
1995/96	280.604	758.603	9279.119	1789.666	12107.992	4060.3
1996/97	337.791	572.698	9645.239	2184.331	12740.059	5134.3
1997/98	273.178	407.657	7362.671	1829.462	9872.969	5532.8
1998/99	227.342	1145.633	8583.842	1939.456	1196.279	4810.6
1999/00	249.409	1573.312	8890.996	2264.001	12977.719	4913.1
2000/01	280.817	1169.489	10615.985	2323.093	14389.384	4890.2
2001/02	404.745	1570.630	9936.178	2435.129	14346.682	5232.5
2002/03	396.556	1421.506	7369.445	2504.067	11691.574	52723
2003/04	419.221	1732.479	10356.413	2573.005	15081.118	6104.3
2004/05	527.974	1994.865	11906.810	2644.792	17074.441	6280.4
2005/06	472.834	2328.816	11083.088	2804.965	16789.703	6301.499
2006/07	504.514	2797.238	11326.916	2925.579	17554.247	6522.052
2007/08	538.316	3222.418	11576.108	3051.378	18388.220	6750.324
2008/09	574.383	3712.226	11830.782	3182.588	19299.979	6986.585
2009/10	612.867	4276.484	12091.060	3319.439	20299.850	7231.115
2010/11	653.929	4926.509	12357.063	3462.175	21399.676	7484.205
2011/12	697.742	5675.339	12628.918	3611.048	22613.047	7746.152
2012/13	744.491	6537.990	12906.754	3766.324	23955.559	8017.267
2013/14	794.372	7531.765	13190.703	3928.275	25445.115	8297.871
2014/15	847.595	8676.593	13480.898	4097.191	27102.277	8588.297
2015/16	904.383	9995.435	13777.478	4273.370	28950.666	8888.887
2016/17	964.977	11514.741	14080.583	4457.125	31017.426	9199.998
2017/18	1029.630	13264.982	14390.356	4648.782	33333.750	9521.998
2018/19	1098.616	15281.259	14706.943	4848.679	35935.497	9855.268
2019/2020	1172.223	17604.010	15030.496	5057.173	38863.902	10200.202

Note - Based on estimate of CSA

- **NBE, Quarterly Bulletin**
- **MOI Annual statistical Bulletin June 2005**

Annex 3 The regression formula

Estimates of parameter α and β the regression line

$$\mu\gamma/\chi = y\delta^{x}$$

is estimate from a sample size "n" by

$$\breve{y}\chi = a+bx$$

$$\text{where } b=\frac{n\sum_{i=1}^{n} x_i\gamma_i - (n\sum_{i=1}^{n} x_i)(\sum_{i=1}^{n}\gamma_i)}{n\sum_{i=1}^{n} x_i^2 - (\sum_{i=1}^{n} x_i)^2}$$

Values of regression curves

1. **Export**

$$\breve{y}\chi = (231.686)\ (1.067)^{\chi}$$

2. **Import**

$$\breve{y}\chi = (512.035)\ (1.152)^{\chi}$$

3. **Agriculture**

$$\breve{y}\chi = (8723.704)\ (1.022)^{\chi}$$

4. **Industry**

$$\breve{y}\chi = (1765.225)\ (1.043)^{\chi}$$

4. **Transport performance**

$$\breve{y}\chi = (4316.185)\ (1.035)^{\chi}$$

Annex 4 Growth rates

$$G = / \sqrt[t]{p_i/po-1/x100}$$

where pi = current population
po= previous population
t = number of years (time)

Annex 5 Location of weigh bridge stations

	Name	Distance from Addis Ababa(km)	Direction/Location
1.	Almemgena	22	Jimma a road
2.	Awash	232	Harer Road
3.	Dengego	495	b /n Dire Dawa and Harer Road
4.	Holeta	42	Ambo Nekemte Road
5.	Jimma	235	At Jimma Town
6.	Kombolcha	375	Dissie Road
7.	Modjo	78	Nazreth-Awash
8.	Sululta	20	Debremarkos Road
9.	Shasemene	250	Shashemene Town

Source- Axle road management in Ethiopia, Draft final report.(2002)

Annex 6 Total Vehicles passed through the weight stations-2003/04

Station	ALEMGENA			HOLETA			KOMMBLCHA			MODJO			SHASHEMENE			SULULTA		
Vehicles	**TRK**	**TRKTL**	**SMTL**	**TRK**	**TRKTL**	**SMTL**	**TRK**	**TRKTL**	**SMTL**	**TRK**	**TRKTL**	**SMTL**	**TRK**	**TRKTL**	**SMTL**	**TRK**	**TRKTL**	**SMTL**
Months																		
July	569	152	13	771	464	41	328	327	2	827	1175	171	334	166	25	671	170	9
August	527	121	13	909	686	60	355	65	38	601	975	118	286	130	8	612	94	4
September	437	80	6	763	475	52	321	182	9	717	1035	183	251	117	11	454	81	5
October	587	105	7	902	666	55	401	-	-	898	1275	219	336	144	26	578	88	4
November	546	135	51	692	534	50	384	205	6	755	1081	126	400	224	2	591	93	1
December	618	141	19	716	894	57	428	277	4	719	1262	248	429	212	17	573	160	1
January	671	155	9	848	831	543	358	213	14	565	1176	178	398	231	6	454	138	13
February	549	163	7	758	717	58	347	217	6	663	1631	298	383	253	3	529	126	3
March	838	256	12	1335	1428	86	421	298	38	1039	2061	394	279	219	2	725	164	6
April	804	282	19	1070	1323	78	346	227	17	797	1666	346	180	211	1	558	323	21
May	852	152	20	954	961	73	440	310	45	1193	2045	443	252	170	19	498	305	11
June	839	305	40	886	709	65	760	520	55	1084	1774	425	221	234	5	540	244	19
Total	**7310**	**2047**	**216**	**10650**	**9688**	**729**	**4889**	**2936**	**244**	**9858**	**17156**	**3149**	**3749**	**2311**	**116**	**8783**	**1991**	**91**

Source: WEIGHT STATIONS

NOTE: Author's calculation

TRK- TRUCK

TRKTL-TRUCK TRAILER

SMTL- SEMITRAILER

Annex 7 DATA SHEET (COMMODITIES)

No	Origin	Destination	Commodity weight in ton and by type																				
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	

Annex 8 Commodity Types (Groups)

1. **Fuels**
2. **Coffee/tea**
3. **Oil seeds**
4. **Pulses, vegetable + fruits**
5. **Livestock, meat and meat products**
6. **Cotton, Textiles**
7. **Grain cereals, flour**
8. **Sugar + cane**
9. **Salt**
10. **Cement and Lime**
11. **Fertilizers**
12. **Metal and Metal products**
13. **Industrial machine**
14. **Hedes + skins**
15. **Chemicals**
16. **Plastic products**
17. **Spices**
18. **Incense and Gum**
19. **Drinks(packed)**
20. **Wood & wood products**
21. **Others or unspecified**

Annex 9 Freight Transport Study Freight Movements

Year_____

No	Company	Fleet size			Total Capacity	Fright moved in tons	Import/ Export
		Truck	Trailer	Semi trailer			

Annex 10 Data Sheet Commodity movement Data Coverage

Station _____

Year _____

No	Commodity Type	Total Commodity Weight	Direction		Total Vehicles