A SHIFT FROM UNIMODAL TRANSPORT TO MULTIMODAL TRANSPORT OPERATION IN GHANA;
THE RIGHT POLICIES AND INFRASTRUCTURE

BY

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DECLARATION

I hereby declare that with the exception of references and quotations, which have been duly acknowledged, this dissertation is my own original work, done under the supervision of Mr. Bernard S. Cudjoe and Mr. Micheal Dzikunu (MICS).

I further declare that this work has not been concurrently or earlier submitted in candidature for any other degree.

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DEDICATION

This work is first and foremost dedicated to God almighty.

To my family, my lovely wife, Hamida and my daughters, Shasmeen and Ameera.
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First and foremost I would like to thank God Almighty for a lifetime full of success, blessing, challenges and hope.

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ABSTRACT

A multimodal transport operation requires the adequate transport infrastructures in place to enable the smooth transition of goods on the various modes of transport. To enable efficient and effective use of multimodal transport operation, there must be proper coordination between the various transport modes in order to create a seamless flow of transportation activities. When there is a discord in the multimodal transport arrangement, it create undue delays, damages and losses. However, when the multimodal transport operation is expeditious, the goods are delivered just in time to meet the market demand. Multimodal transport operation must also be backed by policy and regulation as well as the sources of finance for the infrastructural projects. Many international businesses are successful because the businesses are done within adequate infrastructural and technological environment and in the right policy regimes.

For a multimodal transport operation to take off in Ghana, infrastructural needs and the policy framework must be fused together.

Unimodal transportation was the order of the day, until recently as globalization has finally gained ground in developing countries like Ghana. Businesses have been seeking the fastest ways of transporting goods in the most effective and efficient way. This has given rise to the use of multimodal transportation. Every multimodal transport arrangement has stages of unimodal transportation involved but the choice of the combination must be intelligently fashioned to satisfy consumers demand.

As the whole world battles with the unification and harmonization of the transport laws that will set multimodalism on an international plat form. Ghana’s transport policy framework is faced with challenges of the legal ramification and synchronization of international trade laws with the local laws that regulate multimodal transport. It involves huge capital to deal
with transport infrastructures and for that matter multimodal transport operations in Ghana. 

There is the need to fuse all these modes of transport operations together to achieve the full economic benefit that transportation of goods and passengers has to offer. If trade is the engine of development and growth in society, transportation can be described to be the vehicle that carries the trade. For development to reach all parts of the country the transport infrastructures must be put in place to provide a smooth and expeditious movement of goods and people. The unimodal transport mode that exists will no longer be able to support the system once the economy grows along with the introduction of sophisticated machines, vehicles and irregular dimension cargoes and other bulk and dangerous goods coming in from foreign countries coupled with those goods going out of the countries therefore the need for the assessment of the right policies and infrastructures that will support multimodal transport operations in Ghana. When the system gets saturated with businesses and trade activities, the driving mechanism such as the transport infrastructures and the right policies must be put in place to provide a robust infrastructures to ease up the complexities of the transport demand by the users and the development emanating from the outfall of the growth and development in the country, hence the need for a shift from a unimodal transport to a multimodal transport operation in Ghana. Multimodal transport operation will open up the economy and minimize cost of transporting transit goods and reduced the burden of multiple handling among others.
1.0 INTRODUCTION

We do not need transportation in itself according to the derived demand theory but there is the need to move people and goods from one place to another and therefore we need some logistics to do that, hence the need for transportation.

In the olden days transportation was basically achieved by way of using primitive means such as donkeys etc which was slower and time consuming. Currently or some few years back, human activities have become sophisticated and we have access to vehicular transport, air transport, rail transport and water transport as well as pipelines, tube freights and tunnels for high speed trains.

Ghana is a strategically located littoral country and endowed with a sparse river resource that stretch from the northern parts of the country to the southern part.

The map showing the lake connecting the seaport and the Northern parts of Ghana, passing through five regions in Ghana.

The land meets the sea some few kilometres away from the seaport, and connects to the river, some few kilometres away, flowing through five major farming regions in Ghana. This linkage has a huge potential in developing multimodal transportation rapidly. The navigable nature of the river across the entire length and breadth of the Volta Lake is a great opportunity for transportation,
trade and development in these affected regions and across borders. Considering how far away some of the regions are from each other or from the major seaports, the most far reaching and economical means of transportation must be employed so as to promote trade and equitable development across the country. Transportation plays a pivotal role in the development and growth of all economies, particularly when the various transport modes are being exploited to cover the entire country and to give access to the generality of the populace.

This paper seeks to present findings and recommendations to serve as a basis for establishing a multimodal transport infrastructure backed by a national transport network policy in Ghana. An efficient and reliable transportation network such as minor routes connecting feeder roads to major roads and highways will enhance smooth movement of cargoes and faster transfer and delivery of consignment. The existence of intermodal transport will eliminate or reduce the logistics practices or the existence of some of the logistics functions like warehousing which adds inventory and carried cost etc to the firms purchase and handling cost. Those logistics processes cause delay in both the manufacturing and the transportation industries. The time it takes for placing an order, transporting the materials, storing upon arrival for checking, tallying and stock taking for a period of time before the material is finally used for the production is a time wastage.

In a unimodal transport arrangement where the vessel arrives at a berth with a cargo, after discharging the load unto the port terminal, another arrangement will now be made to convey the cargo to a transit shed for onward delivery, and then onto a truck to its final destination. The intermediary handling and logistics arrangements lead to further delay.

Instead, transporters and forwarders want a seamless chain of logistics transport arrangement from reception to final delivery, the situation whereby the lengthy processes will be shortened to a single process of an efficient and reliable transportation system of materials from the source or the origin straight to the industries, market centres ready for the production of the goods by way of using combined or multimodal transport arrangement from the sea ships unto the rails and unto
the inland water barges to be discharged onto road trucks or rails to be sent to its final destination under the responsibility of a single carrier, hence the call for the shift from unimodal transport arrangement to a multimodal transport facet, combining rail, road, water, air and pipeline modes of transport arrangement into the Ghana’s transportation system.

1.1 BACKGROUND TO THE STUDY

In this 21st century, innovation and technological advancement had set in and transport planners and logisticians are looking at better ways to move goods from one point to another. However, the carriage of goods from one point to another requires infrastructural facilities, like good road network, bridges, rail networks, terminals, navigable waterways and the right policies and regulatory framework to enhance the trade and to make it sustainable.

Nowadays, tube freights, high speed trains, aeroplanes, very sophisticated vessels and pipelines are being used to move passengers and or cargoes around the world in huge numbers and volumes. For rapid development and economic growth, there is the need to fuse together the various modes of transport in order to expand all the sectors and to provide equal opportunities to all and most importantly to reduce the needless logistics chain like inventory, tallying warehousing etc and introduce the modern ways of doing things-vis-a-vis transportation hence the need for multi modal transport and the appropriate laws to support its operations.

Fusing the various modes of transportation by way of multimodal or intermodal transport operation in Ghana will require the support of major stakeholders and government support in the provision of the various infrastructural facilities and logistics, and above all sustainable policies to enable the systems work.

For example, the transportation sector up to date does not have a comprehensive national transport policy (National Road Safety Commission, 2012). A national transport policy draft was put
together and reviewed the third time but could not be passed into law. According to the national road safety commission, to enforce and regulate the movement of long vehicles carrying gas and fuel, and their use of certain routes particularly where there are established dedicated routes designed for the carriage and transportation or transmission of such products, like the motorway and the Bulk Oil Storage Transport Company Limited (BOST) pipelines. There must be policies in place, and for those policies to be workable there must be adequate infrastructural development. These policies must be looking at safety of life and properties as well as the protection of the environment. The volume of cargoes being transported from the ports across the country by road using vehicles that might be discharging fumes into the atmosphere and the risk of accidents and explosions from liquid cargo, liquefied gas and other chemical and dangerous goods must be made to be transported safely. This can be possible if transportation of such cargoes are done in a certain modes or at certain times so that the possible hazard emission tendencies associated with the transportation of such goods in large quantities can be controlled and managed well. Example, the use of pipelines to transmit liquid cargo from oil refinery industry or companies across the country to an inland port into barges to land linked countries. The use of rails to carry goods or irregular dimension cargo from international ports, transiting at an inland ports across the country to a terminal for onward delivery to other neighbouring countries or regions. A well-structured multimodal transport arrangement with adequate policies will enhance the business of transporting goods in their right prescriptions following the handling and packaging, packing and labelling instructions in transit and the terminal or even while transporting them. Manufacturing and bulk distribution companies such as coca cola, Nestle, brewery, edible oil, petroleum production companies who haul their products across the length and breadth of this country should be transporting their large volume consignments by access rail connections from their factories feeding the inland ports for onward distribution and delivery to the market centres. The reverse logistics can be even more convenient and timely when the raw materials are
discharged onto rails directly from the vessels to be sent to the factories eliminating excessive handling that will culminate into delay.

The national policy such as axle load limit, use of heavy truck lanes and dedicated route is lacking in the area of transportation of goods. For national development purposes there must be a clear cut policy to direct growth and economic expansion.

The major problems with many developing countries that need to develop on the back of major innovative concepts and technological advancements like the intermodal or multi modal transport arrangement are lacking the capital for the infrastructural development and the expertise and also political willingness to pursue the course towards the level of robust technological advancement needed.

The problem is if Ghana as a nation can adopt the strategies, business acumen and the technical expertise and the right political decision as well as the suitable policy regulation to set up the developmental framework towards achieving the following, there will be access to the hinterlands and equitable development across the country and trade and economic expansion will be boosted in the country sides;

- Establish a national transport policy to ensure regulation of use of transportation and various modes of transportation and its arrangements.
- Create requirements needed for adequate movement of cargo and goods that will ensure decongestion and maximise revenue so as to enhance economic growth for expansion for equitable development across the country.
- Developing the needed infrastructures such as roads, rails, ports, terminals as well as pipelines to ensure bulk liquid cargoes are transported across a long distance in large consignment.
- Establish the linkages between factories and market centers to carry irregular dimension cargoes, raw materials, as well as other finished product.
• Establish linkages between the ports to the hinterlands to ensure goods are transported rapidly by access trains, vehicle, ferries or crafts to the factories or the market centres for further processing or use for development.

• Enact policies and laws to encourage all stakeholders, operators to use the most economical, effective and approved means of transportation to achieve economies of scale and the stated purpose for which those infrastructural facilities were established.

National transport policy enactment will be ideal and suitable for the multimodal transport arrangement or combined transport facet operation where movement of goods are smooth without the use of warehouses and other inventory logistics hindrances.

A document put together by the Director, Planning in the ministry of roads and transport and the adviser to the ministry, E. A. Kwakye and P.R. Fouracre respectively on the topic ‘The Urban Transport Policy Reform in Ghana’ associated the dwindling transport infrastructure to among other things;

"A low capacity of the existing road network, and its inefficient use"

"Inadequate transport infrastructural facilities across the entire country’’ being the fundamental problems facing the development of Urban Transport Policy.

Within the Urban Transport Policy objectives framework, national transport policy is aimed at achieving the following;

"Making transport operations safe, efficient and economically viable.’’

"Ensuring sustained growth in the transport industry through adequate investment.’’

"Strengthening the transport linkages with neighbouring countries.’’

1.2 PROBLEM STATEMENT

There is no comprehensive transport system comprising a well-structured rail line system connecting the road network. And also, rail line linking the inland water transport infrastructure at
terminals to receive cargo for onward transfer or feed the seaport with our export trades and also serve as a straightforward logistics platform for industrialisation to take off in Ghana. As an emerging trade hub and a growing industrialised economy, with free trade zones established by law that has a core mandate to promote export so as to balance the import and export of the country’s trade, the airports and the seaport are not linking the industrial zones with rail lines, the inland waterways and the roads. The existence of the Volta Lake is a resource that must be developed. The entire lake is infested by underwater obstructions such as tree stumps, shoals and sand banks hindering the smooth navigation and transportation by inland waterway.

The lack of effective rail infrastructure is a major problem facing multimodal transport in Ghana. An example is the lack of rail tracks and terminals connecting the seaport to operationalize the Boankra inland port project, contributing to the congestion of the ports and the heavy cargo truck traffic on our roads.

It is the effective, efficient and reliable transport systems that enhance the practice of the concept of multimodalism. There are various road, rail, pipelines and waterway transport network problems that confront the expeditious movement and delivery of cargoes from our ports to the various industries, market centres and across the country.

In Ghana there is no comprehensive national transport policy except the 3rd draft transport policy put together by the transport ministry; this is a joint responsibility of ministry of transport and Ghana Highways Authority to put in place an integral transportation system for the sustainability of the industry.

It is the overall responsibility of the government to enact the laws and regulation that will play the role of enhancing the movement of passengers and cargoes safely and timely.

The inadequate infrastructure and the lack of interconnections between the various modes of transport across the country linking the main seaport to the northern parts and the land linked countries is creating disconnect between the hinterlands, the trade zones or market centers and
manufacturing industries. Example of the discords that exist in the transport logistics arrangement which does not promote smooth movement of cargo to take advantage of economies of scale, which causes delay and create adverse financial effect to the economy thereby making some businesses incur excess avoidable cost that put those businesses in an awkward situations are;

- The transmission of petroleum product via pipelines from Tema oil refinery to the various strategic reserve tanks across the country, located at Juapong- serving the Volta region, Akosombo Port – for onward transportation to the north, Buipe and Bolgatanga– serving the northern region via barge through the inland transportation, that normally will take 24hours to do but will be done instead by bulk road vehicles (BRV’s) in more than 72hours causing shortage of fuel at the pumps and allowing the pipeline to lie fallow.

- The number of days it takes for a truck full of cargo from the south to reach the northern part of the country with all the hazards to other road users and the environment with associate road traffic congestion.

- The usage of inland water transportation by cargo barges that can ensure economies of scale is not patronised causing rapid road deterioration and delay.

1.3 OBJECTIVES

Fusing together the various modes of transport will promote effective trade and industrialisation. The ability for a nation to provide transport infrastructural facilities to bridge the transport modes for the transfer of goods determines how fast its economy will grow and how robust the industry will become. In order to address the problems facing the establishment of a national transport policy on carriage of goods particularly petroleum products and other heavy cargo and irregular dimension consignment expeditiously to support the industrialisation of the economy. The following are the objectives of the research:
• To determine why industries in Ghana are not practicing multimodal or intermodal transport arrangement.

• To determine the extent of inadequate transport infrastructure in Ghana.

• To determine the workability of the draft national transport policy.

1.4 RESEARCH QUESTIONS

This paper seeks to obtain answers to the under listed questions to enable the researcher gather relevant information that will form the basis of fact of the research;

• Is the existing transport infrastructure adequate for multimodal transport operations?

• Are the industries in Ghana interested in multimodal transport arrangement?

• Can the existing draft transport policies support the practice of multimodal transport operations?

• Can the practice of multimodal transport operation contribute to the national development?

• Can a comprehensive review and implementation of the draft transport policies be possible in Ghana?

• Does Ghana need transport policy to operate an intermodal or multimodal transport?

1.5 SIGNIFICANCE OF THE STUDY

This research work seeks to undertake a comprehensive study of the national transport policy and the needed infrastructure required for a shift from a unimodal transport arrangement to a multimodal transport operations in Ghana.

If the recommendations of this paper is adopted, and put to use, it will create a robust and efficient transport sector.
Also, this thesis will serve as a reference for academic purposes as well as being able to be used as a road map or policy statement on the establishment of a multimodal or intermodal transport operation in Ghana.

1.6 LIMITATION

In the event of gathering data for this thesis, there were a lot of hindrances, challenges and difficulties encountered. The officials at the various agencies and organisations were reluctant to grant me audience, those who were willing to will not delve deep into the core of the issue to enable me get to a material fact and conclusion on the subject matter.

Another limitation was unavailability of current literature on the subject to be accessed and use as for review. Some of these materials are supposed to be on the internet but one has to pay to get access to scanty information or wait for hours to download. Another difficulty I encountered was the distance I had to drive to visit the organisations that I had scheduled to interview or administer questionnaires to. May be the most frustrating challenge was the rampant power outage experienced throughout the period of the study. In spite of all the challenges and difficulties enumerated above, the analysis proved adequate and the suggestions proffered in advocating for a multimodal transport operation in Ghana are sufficient.

1.7 DELIMITATION

The interview of the Ghana Highway Authority and Ghana Railway Authority and key officials concerned with the issues were not made possible due to absenteeism, inadequate time, busy work schedules and refusal to grant me the interview.
1.8 METHODOLOGY

The research instruments used were mainly questionnaires and structured interviews as well as some field observations. The data collected for the research work were both primary and secondary. However, the primary source of the data was from questionnaire, interviews and observation. Also, the secondary source of the data used for the research was from internet and lecture materials as well as text books.

1.9 SCOPE OF THE STUDY

This project covers the multimodal transport networks linking the seaports, roads; rail lines, inland ports and pipelines. The major and minor routes linking the various market centres and industries such as Accra central, industrial area and the spare part market, Kumasi central market and the spare part market, Akosombo port and Buipe port as well as Paga – Ghana – Burkina Faso border, etc. from the multimodal facet and the conditions of the networks that hinder the smooth transportation and use of multimodal transport arrangement in Ghana. The policy framework and infrastructural facilities needed to create a smooth transition from a unimodal transport to a multimodal transport operation in Ghana. The above elaborate activities establish that in addition to the five organisations such as Volta Lake Transport Company Limited, Ghana Cement Company Limited (GHACEM), Ghana Rail Way lines, Bulk Oil Storage and Transport Company Limited(BOST) and the Transport Ministry, Truckers, Shippers (both consignees and consignors) as well as passengers must be included in the sampling of the research data.
CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter presents clearly a general overview of multimodal or intermodal transport policy, as gathered from various authors. Also, best practices of multimodalism and or transportation in general and transport policies in general as documented by other countries and institutions or agencies relevant to the study. This study will review all the various modes of transport and how they are operating currently, and to compare and contrast as the research reviews some of the policies of the subject matter and ascertain the importance of adequate transportation policies and the required infrastructure that will enhance multimodal transportation in Ghana.

The purpose of the overview is to conceptualize the problems of transportation in Ghana holistically and understand the various transport sectors. It covers the features, advantages and the constraints of the sector. Followed by an exploration of some policies of other countries in the transport sector that are actively using intermodal transportation as the engine for industrialization to enhance trade and development, that can be adopted in Ghana’s transport policy framework.

The results and recommendations of the review of the various sectors will form a basis for comparison and analysis in the subsequent chapters of this study.

2.1 DEFINITION OF MULTIMODAL TRANSPORT (MT)

Multimodal transport, as understood by many, refers to a transport system usually operated by a carrier(for instance a container line which operates both a ship and a rail system of double stacked trains) with more than one mode of transport under the control or ownership of one operator.


The most authoritative definition of the term “international multimodal transport” is provided in article 1 (1) of the United Nations Conventions on International Multimodal Transport Of Goods
1980 (hereinafter referred to as the MT Convention) which reads as follows: “‘International multimodal transport’ means the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country....”

This definition should be read in conjunction with the definition of the term “multimodal transport operator” (MTO) provided in article (2) of the MT Convention, which provides:

“‘Multimodal transport operator means any person who on his behalf or through another person acting on his behalf concludes a multimodal transport contract, and who act as a principal not as an agent or on behalf of a consignor or the carriers participating in the multimodal transport operations and who assumes responsibilities for the performance of the contract.” Thus, the main features of a multimodal transport are:

- The carriage of goods by two or more modes of transport,
- Under one contract,
- One document and
- One responsible party (MTO)” for the entire carriage, who may subcontract the performance of some, or all modes of carriage to other carriers.

The term “combined transport” and “intermodal transport” are often used interchangeably to describe the carriage of goods by two or more modes of transport (Thomas SIM, 2005).

2.2 GENERAL FEATURES OF MULTIMODAL TRANSPORT

Goods moving in international trade often have to pass through the hands of more than one carrier and over more than one modes of transport. Under the convention system of segmented transport, the consignor enters into separate contracts with each carrier, the liability of each carrier being limited to the carriage performed by him. The consignor or his agent has also to attend to all the
arrangements required for the transshipment of goods from one mode of transport to another, including, if necessary, warehousing of the goods at any transshipment point.

2.3 ADVANTAGES OF MULTIMODAL TRANSPORT

2.3.1 Minimises Time Lost At Transshipment Point
Multimodal transport, which is planned and coordinated as a single operation, minimizes the loss of time and the risk of loss, pilferage and damage to cargo at transshipment points.

The intermodal transport operator maintains his own communication links and coordinates interchange and onward carriage smoothly at transshipment points (Thomas SIM, 2005).

2.3.2 Provides Faster Transit of Goods
The faster transit of goods made possible under multimodal transport reduces the disadvantages of distance from markets and tying-up of capital.

2.3.3 Reduces Burden of Documentation and Formalities
The burden of documentation and formalities connected with segmented transport is reduced to a minimum.

2.3.4 Saves Cost
The savings in cost resulting from these advantages are usually reflected in the through freight rates charged by the multimodal transport operator and also in the cost of cargo insurance.

2.3.5 Establishes Only One Agency to Deal With
The consignors only has to deal with the multimodal transport operator in all matters relating to the transportation of his goods, including the settlement of claims for loss of goods, or damage to them, or delay in delivery at destination.

2.3.6 Reduces Cost of Exports
The inherent advantages of multimodal transport system will help to reduce the cost of export and improve their competitive position in the international market.
2.4 TRANSPORTATION AND ITS IMPORTANCE

The importance of transportation cannot be underestimated. Nothing is more important to civilization than transportation, and apart from tyranny and oppression nothing is more harmful to the development and well being of a society than the irrational transportation system. Trade is essential to economic growth and transportation is essential to trade. Transportation is a derived demand born out of the need to trade. All trade of wealth and productive labor involves transportation, whether it is the carriage of goods or movement of people from one place to another. Transportation is the focal or the pivot around which all the economic activities revolve. Trade however is, impossible without transportation and complex trade is impossible without modern mechanized transportation (Rodrique, 2013).

Until recently and with the advent of railroads, transportation was treated as a "public good anyone within the society could use. Even man- made systems such as roads and canals were usually publicly cooperatively owned and any charges for use were dedicated to offsetting construction and maintenance costs. Transportation is normally described in terms of modes. Transportation modes are an essential components of transport systems since they provide the means by which mobility is supported (Abubakar, 1998). Transportation modes are categorized into the wide range of areas and mediums they exploit: land, water and air. Each mode has its own requirements and features, and is adapted to secure the specific demands of freight and passenger traffic. This gives rise to marked differences in the way the modes are deployed and utilized in different parts of the world. More recently, in the developing countries, there is a trend towards integrating the modes through intermodality and linking the modes ever closely into production and distribution activities.
2.5 OVERVIEW OF TRANSPORTATION MODES

A transport mode is defined by (Rodrique, 2013) as the means by which freight and people achieve mobility. They are categorized into one of three basic groups, depending on or over what surface they travel – land (road, rail and pipelines), water (shipping) and air. Each mode is characterized by a set of technical, operational and commercial characteristics:

- **Road transportation**: Road infrastructures are large consumers of space with the lowest level of physical constrains among transportation modes. However, physiographical constrains are significant in road construction with substantial additional cost to overcome features such as rivers or undulating terrain. While historically road transportation was developed to support non-motorised forms of transportation (walking, domestication of animals and cycling at the end of the 19th century), it is motorisation that has shaped most of its development since the beginning of the 20th century. Road transportation has an average operational flexibility as vehicles can serve same purpose but are rarely able to move outside roads. Road transport systems have high maintenance cost, both for the vehicles and infrastructures. They are mainly linked to light industries where rapid movement of freight in small batches are the norm. Yet, with containerization, road transportation has become the crucial link in the distribution of goods incidental with the other modes.

- **Rail transportation**: Railways are composed of a traced path on which vehicles are bound. They have an average level of physical constrains linked to the type of locomotives and a low gradient is required, particularly for freight. Heavy industries are traditionally linked with rail transport systems, although containerisation has improved the flexibility of rail transportation by linking it with road and shipping terminals. Rail transportation system is by far the land transportation mode offering high capacity. Rail transportation is
the most far reaching mode of land transport mode supplemented by the road transport undertaking the deliveries and distribution of goods.

- **Pipeline:** pipeline route are practically unlimited as they can be laid on land or under water. Pipelines are the most efficient and economical mode of transportation. Pipelines are normally used to transport liquid products and can transmit huge volumes of liquid product. The longest gas pipeline links Alberta and Sarnia in Canada, which is 2,911 km long. The longest oil pipeline is the Trans-Siberian, extending over 9,344 km from the Russian arctic oil field to Eastern Siberia to Western Europe. Physical constrains are less and includes landscape. Pipelines construction cost vary according to the distance and diameter of the pipes and maintenance is another constrain hence some pipelines has to be above the ground for most of its path. Pipelines connect refineries to ports and storage facilities.

- **Water Transportation:** Because of the physical properties of water conferring buoyancy and limited friction, maritime transportation is the most effective mode to move large quantity of cargo over long distances. Main maritime routes are composed of oceans, seas, lakes, rivers and channels. However, due to the location of economic activities maritime circulation takes place on specific parts of the maritime space, particularly over the North Atlantic and North Pacific the construction of channels, locks and dredging are attempts to facilitate maritime circulation by reducing discontinuity. Comprehensive inland water way systems include Western Europe, the Volga / Don system, St. Lawrence / Great Lake system, the Mississippi and its tributaries, the Amazon, the Panama / the Paraguay and the interior of China. Maritime transportation has high terminal cost, since port infrastructures are the most expensive to build, maintain and improve. High inventory cost also characterise maritime transportation. More than any other mode, maritime transportation is linked to heavy industries, such as steel and petrochemical facilities adjacent to port sites.
Air transportation: Air routes are practically unlimited, but they are denser over the North Atlantic, inside North America and Europe and over the North Pacific. Air transport constraints are multi-dimensional and include the site (a commercial plane needs about 3,300 meters of runway for take-off and landing), the climate, fog and aerial currents. Air transport activities are linked to the tertiary and quaternary sectors, notably finance and tourism, which lean on the long distance mobility of people. More recently, air transportation has been accommodating growing quantities of high value freight and is playing growing role in global logistics.

2.6 OVERVIEW OF MULTIMODAL TRANSPORT POLICY AND INFRASTRUCTURE PLANNING:

Transport policy is the regulation or legal framework that governs the use of the transport facilities or the carriage of goods while transport infrastructure is the basic facilities, services and installations needed for the functioning of a community or society such as transportation and telecommunication systems etc or the underlying base or foundation or system. The term infrastructure has been used since 1927 to refer collectively to the road, bridges, rail lines, harbor and terminals etc and similar public works that are required for an industrial economy, or a portion of it to function.

2.7 MULTIMODAL TRANSPORT POLICY

For Efficient and Effective transportation network to be achieved, the issues such as; Policy, Regulatory and Structural issues must be properly and adequately addressed. While countries in the sub region struggle to put adequate transport infrastructure that can support multimodal transportation in place, the developed countries had already made a stride in that direction and had
also put some notable legal regimes in place to guide the multimodal transport operations. A multimodal transport operation is made up of unimodal stages of transport, such as sea, road, rail or air, even pipelines to some extent etc. each of these is subject to a mandatory international convention or national law. There are standard contract terms for incorporation into multimodal transport documents. The rules, being contractual in nature, will have no effect in the event of conflict with the mandatory law.

The lack of a widely acceptable international legal framework on the subject has resulted in individual governments and regional / sub regional inter-governmental bodies for taking the initiative of enacting legislation in order to overcome the uncertainties and problems which presently exist.

Consequently, concerns have been expressed regarding the proliferation of individual, possibly divergent legal approaches which would add to the already existing confusion and uncertainties pertaining to the legal regime of multimodal transport and the fact that some countries like Ghana still does not have all the infrastructural facilities in place for a smooth multimodal operations to take off, coupled with the fact that we have not adopted any of the said international legal regimes governing multimodal transport operations. Even though Ghana has ratified the international conventions of the law of the sea and similar transport conventions but it is not operational.

The problem which arises is the extent to which these mandatory conventions applicable to unimodal transportation would also influence contracts where more than one mode of transport is involved, (Ramberg, 1992) bearing in mind that some of these unimodal conventions also extend their scope into multimodal transport. (Faber, 1994) For example the CMR (article 2), CIM (article 2) and Montreal conventions specifically include provisions dealing with transport of goods by more than one mode. In any event, in the absence of a uniform liability system for multimodal transport, the liability for each stage of transport is determined by the relevant unimodal convention or the national laws which adopts varying approaches to issues such as
liability questions. Therefore, the liability of the multimodal transport operator for loss or damage
to goods can differ depending on which stage of the transport the loss has occurred. The question
becomes even more complicated if the loss or damage cannot be localized, or the loss or damage
occurred gradually during the entire transport.
Thus, the greatest shortcomings of transport law are considered to be: “the vast differences
between the rules governing the different transport modes, different grounds of liability, different
limitations of liability, different documents with a different legal value, different time bars. Where
it may perhaps be said that this particularism did not constitute such a formidable problem when
unimodal transport was still predominant, its drawbacks become glaringly obvious when attempts
are made to combine different transport modes and, inevitably their different legal regimes into a
single transport operation governed by a single contract” (De Witt, 1995).
As every intermodal transaction is made up of unimodal stages, a number of mandatory
international liability regimes which are potentially applicable, depending on their scope of
application and the stage of transport where a damage or loss occurs. Accordingly, two different
regimes may apply to the same claim or the regime which applies can only be identified when it is
clear during which stage of the transport a loss/damage occurred. Where the stage of transport
during which loss or damage occurred cannot be identified, where loss or damage occurs
gradually, or in the course of (value - added) service ancillary to transportation (e.g. warehousing),
a carrier’s liability will often depend on national laws and or contractual agreement. As a result,
both the applicable liability rules and the degree and the extent of a carrier’s liability vary greatly
from case to case and are unpredictable. Liability for delay in delivery is not always covered by
the same rules as liability for loss or damage to the goods”.
These international legal regimes have been successful in the developed countries and are
enforceable because, the local transport laws have been synchronized with the international
conventions of multimodal transportation and also the transport infrastructural development is
adequately provided, even though they have not achieved uniformity internationally. So in cases of loss, damage to cargo, the liability and the stage or the mode that caused the loss can be easily determined.

In spite of various attempts to establish a uniform legal framework governing multimodal transportation internationally, no such international regime is in force. The MT Convention has failed to attract sufficient ratifications to enter into force. The UNCTAD/ICC rules for Multimodal Transport Documents, which came into force in January 1992, do not have the force of law for implementation (UNCTAD, 2001).

In the Lloyds of London Press, written by De Witt and Ralph, stated in the legal aspect of multimodal transport versus unimodal transport that form a legal standpoint, multimodal transport creates several problems. Unimodal transports are currently governed by differently, often mandatory international conventions. These conventions stipulate different bases of liability and different limitation of liability for the carrier. As of 2011, the solution to this problem has been the so called network principle. According to the network where the breach of contract has occurred, (where the goods have been damaged during transport, for example). However, problems arise if the breach of contract is systemic (not localized) (Lloyds of London, 1995).

In dealing with liabilities involved in multimodal transport, two approaches have been identified; the United States' approach known as the Network Liability System and the European approach known as the Uniform Liability Solution (Ramberg, 2005). In the network liability system, the carrier is liable if the contracting carrier is governed by the rules relating to where the goods took place. The advantage with this regime is that it ensures that the liability of the contracting carrier does not exceed the liability of the performing carrier. The limitation with this regime is that it is sometimes hard if not impossible to localize where the damage took place and it can therefore be difficult to determine what type of transport regulation should be used (Ulfberg, 2009).
In the uniform liability system the liability of the contracting carrier is instead the same regardless of where the damage took place. The advantage with this system is that, it is simple and creates predictability since the liability of the contracting carrier is not dependent on the place where the damage took place. Nevertheless, it’s disadvantage is that the contracting carrier may not always be able to pass on the loss to the performing carrier responsible for the damage, and the carrier may be governed by rules other than those made applicable to the contracting carrier (Ulfberg, 2009).

2.8 UN AND IMO’S ATTEMPT TO ACHIEVE UNIFORMITY ON INTERNATIONAL MULTIMODAL TRANSPORT OF GOODS

The establishment of the widely acceptable legal framework for multimodal transport has proven to be a difficult task. The first attempt was made by the international institute for the Unification of Private Law (UNIDROIT) and dates back as far as to the 1930’s. The work within UNIDROIT resulted in the approval, by its Governing Council in 1963, of a “draft convention on the international combined transport of goods”, (UNCTAD, 2001) which was later on revised by an ad hoc committee of experts. This was followed by the preparation and adoption by the International Maritime Committee (CMI) of a “draft Convention on Combined Transport – Tokyo Rules” in 1969. The draft conventions prepared by UNIDROIT and CMI were combined into a single text in 1970, under the auspices of the Inland Transport Committee of the United Nations Economic Commission for Europe (UN/ECE), known as the “Rome Draft”. This draft was further modified by meetings of the UN/ECE and the Intergovernmental Maritime Consultative Organization (IMCO) during 1970 and 1971, and came to be known as the “Draft Convention of the International Combined Transport of Goods” better known as the “TCM draft”, using the French acronym for “Transport Combine de Merchandise”. The TCM draft never went beyond the drafting stage. Its provisions were, however, subsequently reflected in standard bills of lading such
as the Baltic International Maritime Conference (BIMCO) combiconbill and in the “Uniform Rules for a Combined Transport Document” of the International Charter of Commerce (ICC).

The UN/IMCO Container Conference, which was to finalize the TCM draft in 1972 recommended that the subject be further studied, particularly its economic implications and the needs of developing countries. UNCTAD was proposed to undertake this task. The Intergovernmental Preparatory Group (IPG) was then set up by the Trade and Development Board (Decision 96 (XII) of May 1973) and, following an extensive investigation, eventually prepared the draft convention leading to the adoption of the United Nation International Maritime Transport of Goods 1980 (Selvig, 1980).

Although the convention has not succeeded in attracting sufficient ratifications to enter into force, its provisions have significantly influenced the type of legislation enacted in a number of countries/regions.

The following are some of the main features of the convention:

The convention applies to all contracts of multimodal transport between places in two states, if the place of taking in charge or delivery of the goods as provided for in the multimodal transport contract is located in a contracting state (article 2). While the convention recognizes the right of the consignee to choose between multimodal and segmented transport, its provisions are to apply mandatorily to all contracts of multimodal transport falling within the provisions of the Convention (article 3).

The liability of the multimodal transport operator (MTO) for loss of, or damage to goods as well as delay in delivery is based on the principle of “presumed fault or neglect”. That is to say that the MTO is liable if the occurrence which caused the loss, damage or delay in delivery took place while the goods were in his charge, unless the MTO proves that he, his servants or agents or any person of whose services he makes use for the performance of the contract, took all measures that could reasonably be required to avoid the occurrence and its consequence (article 16 (1).
A key issue in the context of establishing the liability of the MTO for loss, or damage to goods has been the choice between the “uniform” or “network” system of liability.

Under the “uniform” system the same liability regime is applied to the entire multimodal transport, irrespective of the stage at which the loss or the damage occurred. Under the “network” system, the liability of the MTO for localize damage (i.e. damage known to have occurred during a particular stage of transport) is determined by reference to the international convention or national law applicable to the unimodal stage of transport during which the damage or loss occurred.

The period of responsibility of the MTO includes the entire period during which he is in charge of the goods, that is from the time he takes the goods in his charge to the time of the delivery (article 14). The MTO is also liable for the acts and omissions of his servant or agent or any other person of whose services he makes use for the performance of the contract (article 15).

The MTO’s liability for loss of, or damage to, goods is to be limited to an amount not exceeding 920 units of account per package or other shipping unit, or 2.75 units of account per kilogram of gross weight of the goods lost or damaged, whichever is the higher. If, however, the multimodal transport does not, according to the contract, include carriage by sea or by inland waterway, the limitation amount is raised to a higher level of 8.33 units of account per kilogram of gross weight of the goods lost or damaged, without alternative package limitation (article 18 (1) and (3)). The limitation of liability of the MTO for loss resulting from delay in delivery is calculated by reference to rate of freight, that is an amount equivalent to two and a half times the freight payable for goods delayed, but without exceeding the total freight payable under the multimodal transport contract (article 18(4)). The MTO, however, is not entitled to limit his liability if it is proved that the loss, damage or delay in delivery resulted from an act or omission of the MTO done with the intent to cause such loss, damage or delay would probably result (article 21).
The convention includes the extensive provisions on documentation covering negotiable and non-negotiable multimodal transport documents, their contents, reservations and evidentiary effect (article 5 to 10).

Concerning jurisdiction, the Convention gives a wide option to the claimant to institute an action for claims relating to international multimodal transport. It clearly provides that the plaintiff may sue in one of the following places:

(a) The principal place of business or residence of the defendant;
(b) The place where the MT contract was made;
(c) The place of taking the goods in charge or the place of delivery; or
(d) Any other place agreed upon and evidenced in the MT documents (article 26).

Following the growing trend in international commercial disputes, the convention also recognizes arbitration as an alternative to judicial proceedings. It provides that the parties may agree, in writing, to submit their disputes under the convention to arbitration. As to the place of arbitration, the options available to the claimant for jurisdiction are also available in case of arbitration (article 27).

2.9 UNCTAD/ICC RULES FOR MULTIMODAL TRANSPORT DOCUMENTS

Pending the entry into force of the UN Convention on international transport of Goods 1980, the UNCTAD's committee on shipping, by resolution 60 (XII) of November 1986, instructed the secretariat to elaborate model provisions for multimodal transport documents, in close collaboration with the competent commercial parties and international bodies, based on the Hague and Hague/Visby rules as well as existing documents such as the FBL (FIATA Bill of Lading) of the International Federation of Freight Forwarders Association (FIATA) and the ICC Uniform Rules for a Combined Transport Document.

The UNCTAD/ICC Rules for Multimodal Transport Documents have been incorporated in widely used multimodal transport documents such as the FIATA FBL 1992 and the "MULTIDOC 95" of the Baltic and International Maritime Council (BIMCO). (UNCTAD, 2001)

The main features of the UNCTAD/ICC Rules are the following:

The rules do not have the force of the law but are of purely contractual nature and apply only if they are incorporated into a contract of carriage, without any formal requirement for “writing” and irrespective of whether it is a contract for unimodal or multimodal transport involving one or several modes of transport, or whether or not a document has been issued (Rule 1). Once they are incorporated into a contract, they override any conflicting contractual provisions, except so far as they increase the responsibility or the obligation of the multimodal transport operator. The Rules, however, can only take effect to the extent that they are not contrary to the mandatory provisions of international convention or national law applicable to the multimodal transport contract (article 13).

Similar to the MT Convention, the liability of the MT under the Rule is based on the principle of presumed fault or neglect. That is to say that the MTO is liable for loss of or damage to, the goods and for delay in delivery, if the occurrence which caused the loss, damage or delay in delivery took place while the goods were in his charge, unless he can prove that no fault or neglect of his own, his servants or agent or any other person of whose services he made use of for the performance of the contract, caused or contributed to the loss, damage or delay in delivery (Rule
5.1). Although the basis of liability of the MTO under the Rule is similar to that under the MT Convention, there are significant differences between them.

Firstly, unlike the MT Convention, under Rule 5.1, the MTO is not liable for loss following delay in delivery unless the consignor has made a declaration of interest in timely delivery which has been accepted by the MTO.

Secondly, if the multimodal transport involves carriage by sea or inland waterways, the MTO will not be liable for “loss, damage or delay in delivery with respect to goods carried by sea or inland waterways when such loss, damage or delay during such carriage has been caused by:

- Act, neglect, or default of the master, mariner, pilot or the servant of the carrier in the navigation or the management of the ship;
- Fire, unless caused by the actual fault or privity of the carrier” (Rule 5.4).

These defenses, however, are made subject to an overriding requirement that whenever loss or damage resulted from unseaworthiness of the vessel, the MTO must prove that due diligence was exercised to make the ship seaworthy at the beginning of the voyage (Rule 5.4). The provisions of the Rule 5.4 are intended to make the liability of the MTO compatible with the Hague/Visby Rules by sea or inland waterways.

Similar to the MTO Convention, the period of responsibility of the MTO include the period from the time he takes the goods in his charge until the time of their delivery.

Furthermore the MTO is also liable for the acts and omissions of his servants, agents or any other person of whose services he makes use for the performance of the contract (Rule 4.2).

The limitation amounts established by the Rules for loss of, or damage to, goods are clearly lower than those of the MT Convention. They are based on the limits set by the Special Drawing Rights (SDR) protocol of 1979 amending the limits of The Hague /Visby rules. Thus, according to rule 6.1, unless the nature and value of the goods have been declared by the consignor and inserted in the MT document, the MTO shall not be liable for any loss of or damage to, the goods in an
amount exceeding the equivalent of 666.67 SDR per package or unit, or 2 SDR per kilogram of
gross weight of the goods lost or damaged, whichever is the higher. In the same way as the MT
Convention, a higher limit is provided for cases where there is navigation. In such a case the
liability of the MTO is limited to an amount not exceeding 8.33 SDR per kilogram of gross
weight of the goods lost or damaged (Rule 6.3), without any reference to package limitation which
is more appropriate for sea transport.

Similar to the MT Convention, specific provisions on limitation of liability of the MTO are made
for cases of localized damage. Under Rule 6.4, when the loss or damage occurs during one stage of
transport, in respect of which applicable international convention or mandatory national law would
have provided another limit (and not the higher limit as provided by the MT Convention) of
liability if a separate contract had been made for that particular stage of transport, then the limit of
liability of the MTO for such loss or damage should be determined by reference to the provisions
of such convention or mandatory national law.

The liability of the MTO for delay in delivery of the goods or consequential loss or damage is
limited to an amount not exceeding the equivalent of the freight under the multimodal transport
contract (Rule 6.5). Finally, the MTO is not entitled to limit his liability if it is proved that the loss,
damage or delay resulted from a personal act or omission of the MTO done with the intent to
cause such loss, damage or delay or recklessly or with knowledge that such loss, damage or delay
would probably result (Rule 7).

Rule 10 set a period of time-bar at 9 months. Thus, the MTO will be relieved of liability unless
the suit is filed against him within 9 month of delivery of the goods, or of the date when the cargo
should have been delivered. This is to allow the MTO possibly of instituting recourse action
against the performing carrier, as most unimodal conventions such as the Hague/Visby Rule set
the time-bar period to 1 year. The MT Convention provides for a period of two years.
The Rules envisage the possibility of issuing both “negotiable” and “non-negotiable” multimodal transport documents, including evidentiary effect of information contained in the document (Rules 2.6 and 3). However, the Rules, being purely contractual, it is doubtful whether their incorporation into the MT documents will have the effect of creating a negotiable document in all jurisdictions. Rule 3, concerning evidentiary effect of the information contained in the multimodal transport document, provide that such information shall be *prima facie* evidence of the taking in charge by the MTO of the goods as described in the document unless contrary indications, such as “shipper’s weight, load and count”, “shipper - packed container” or similar expressions have been included in the printed text or superimposed on the document. This will mean that such pre-printed clauses will destroy the evidentiary value of the document which is clearly undesirable. The Rule further provides that proof to the contrary shall not be admissible when the MT document has been transferred to the consignee, who in good faith has relied and acted on such information.

Unlike the MT Convention, the Rules do not include any provisions dealing with jurisdiction and arbitration. Multimodal transport document currently used in practice usually provide for any dispute to be determined by the courts in accordance with the law at the place where the MTO has his principal place of business.

### 2.10 MODELS OR FORMS OF MULTIMODAL TRANSPORT

As quoted below an extract from Paul Kwadwo Yeboah Asuamah in his thesis submitted to the University of Ghana, graduate school for the award of a Masters Degree, titled “addressing operational challenges in multimodal transport system in Ghana”.

Multimodal transport policy cannot by itself be operated, unless it is tied with the provision of transport infrastructures needed to support the use of multimodal transportation. The capital resources to make this a reality, is also another huge task to deal with. This is evidenced in the part of the globe we find ourselves. Advance Governments are vehemently putting measures in place
to ensure the adequate provision of resources match up to the policies regarding transportation in their various countries.

The United Nations Commission on Trade and Development (UNCTAD) annual review of maritime transport, (2011) elaborated on the need to develop the multimodal transport in Africa to enhance maritime growth and cargo volumes. It stated that inland water way, rail, road transportation must be given a lot more attention as regards infrastructure development. The article espoused that the only way to make strides as far as the multimodal infrastructure and policy development in the developing countries is concern is to embark on the public private partnership arrangement (PPP) for types of transport-related public private partnerships in developing countries (review of maritime transport, 2011).

In the USA recently, congress in 12th June, 2012 is considering taxing oil companies to pay for federal roads and highways construction, as legislators debate whether to save the primary engine of surface transportation infrastructure funding to a short fixed or something more ambitious (US Congress, 2012). Triggering the debate over the quality of transport infrastructure to invest in, the need to invest in, and how the policy will contribute to the safety and promotion of smooth movement of goods and passengers.

Debate of driver fatigue and how many hours’ truck drivers spend behind the wheels has resurfaced. Stakeholders and policy makers and planners advocating for designated routes and modes of transportation for some particular goods in bulk. This is to ensure the elimination or reduction in vehicular accident on the roads caused by driver fatigue and night driving.

Joy news on Today’s big story on the 14th of July, 2014 stated that ‘operators in the haulage and transit trade ask Government to revert the axle load limit to the European Union (EU) and Economic Communities of West African States (ECOWAS) agreed limit (Joy news, 2014). This is to ensure that the operators load more either to break even or make more returns on the transport charges. Road transport is quite expensive relative to rail and water transport. But to make trade
more lucrative and competitive, businesses must explore the most economical avenue. For long
distance haulage of goods, other modes of transport must be the best choice rather than road as
road also wears out and deteriorates the roads and adds to cost.

The strict application of engine propelled vessel for ferry crossing and limit the canoes to fishing
activities on the lakes. As the use of the canoes cause accidents and loss of lives occur rampantly.

USA Rail road's intermodal traffic hit historic mark; the union pacific railroad has added 11
domestic intermodal train starts between Northern California and Portland, Oregon and Chicago
this year. Potently allowing the carrier grab business from customers frustrated with ailing services
mandated from the storage of trains. The policy initiatives go to address terminal congestion
issues.

Chicago Inland port shippers get temporary relief from truck banned; truck drivers serving a major
intermodal complex in the Chicago area would be able to again use short cut route after the judge
repealed a local ban on truck traffic on the route. This is to promote expeditious movement of
trucks to avoid traffic congestion.

Another useful transport policy is Rotterdam - Bavaria intermodal link recently seeing heavy use
in traffic. This is due to the additional capacity to address the shortage between the port of
Rotterdam-Bavaria. Analysis of road and intermodal of railways; there are seven class one
railroads in the USA, that hauls the largest share of domestic and intermodal roads. The railway
company and the union pacific rail roads in the west, CSX transportation and Norfolk Southern in
the East, Canadian National and Canadian pacific and Kansas City southern railway. Along with
the regional short line carriers, these rail roads' hauls a variety of bulk and retail goods from coal,
grain to customer goods.

USA makes efforts to promote trade and transportation by way of adequate transport polices. This
transport policy statements seek to address the unavailability of dedicated road or bus lanes at
certain areas and to ensure that drivers do not use any route at all that will resort to disorderliness and traffic congestion on the roads.

"Major transport policies and infrastructural development has made it possible for different types of multimodal transport involving different combinations that are being used to enhance the transportation of goods".

Such as;

- **Land Bridge** -this system concerns itself with shipment of containers overland as a part of a sea-land or a sea-land-sea route. In this case also, the railways are paid a flat rate by the ocean carrier who issues the through bill of lading. This system is in operation for the movement of containers on certain important international route such as: between Europe or the Middle East and the Far East via the Trans-Siberian land bridge; and between Europe and the Far East via the Atlantic and Pacific Coast of the U.S.A., continental U.S.A being used as a land bridge.

- **Land – Sea – Land** -This is where cargo is transported by land whether rail or road or both before it changes mode to the sea and then completes the journey by land to the consignee’s warehouse. This system is also known as the sea bridge. An example of this form of the transport is as follows; an empty container is picked up from the shipping line’s container yard in Singapore and trucked to shipper’s factory in Jahore – Malaysia for stuffing, thereafter the FCL is trucked to Singapore and transported by ocean vessel in New York. There can be several additional links, for instance, if the container was carried by rail from, say, Kuala Lumpur to Singapore.

- **Where LCL cargo is concerned**, the individual shipments would be delivered to the freight forwarders container freight station (CFS) or the shipping line’s CFS and consolidated into FCL which, in Chicago, is trucked to the CFS, from where it is picked-up by the consignee’s truck.
- Land – Air – Land- A combination of air carriage with truck transport is a frequent method of multimodal service in the land – air – land system. Undoubtedly, pick-up and delivery services by road transport are incidental to air transport. This road transportation is often effected with private or carrier’s own vehicles, and to and from their own facilities, but on occasion they do also use highway common carriers. In the advance economies road transport is now being increasingly used, particularly in Europe and U.S.A., for trucking air freight over long distances, sometimes across national boundaries, to connect with the main bases of airlines operating long hauls services such as trans- Pacific, trans- Atlantic and in the intercontinental. But in most developing countries, the road is the dominant type because there is no linkage between the airport and the rail terminals.

- Mini Bridge –this involves the movement of containers, under a through bill of lading issued by an ocean carrier, by a vessel from a port in another country and by rail to a second port city in a second country, terminating at a rail carrier’s terminal in the second port city. The mini – bridge offers the consignor a through container rate inclusive of rail freight up to the final port city in the country of destination. The railways are paid a flat rate per container by the ocean carrier for the rail transit. This system is in operation on certain routes covering the trade between the United States and the Far East, United States/ Europe, United States/Australia etc.

- Sea - Air – Sea – This combines the economy of sea transport and the speed of air transport to carry a large volume of valuable goods over long distances. The mode is increasingly becoming popular in several international trade routes like the Far East Europe route. The economy of this combination favours high value goods such as electronic, electrical goods, computers and photographic equipment as well as goods with high seasonal demand such as fashion wear and toys.
This multimodal operation is particularly applicable where the route to be covered combines large distances via land and water and where transit time is important.

- **Land - Inland Waterways – Sea** - This combination mode is in common use when goods have to be moved by sea from one country to another and one or more inland modes of transport such as rail, road or inland waterways, have to be used for moving the goods from an inland centre to the seaport in the country of origin or from the seaport to an inland centre in the country of destination.

- **Ro – Ro (Roll-On/Roll-Off)** - This mode combines different means of transportation sea, and road) and is used most often with new automobiles, which are shipped by sea or by way of driven on the vessel and then simply driven off the vessel into the importers warehouse. Heavy and over-dimensional cargo is also suitable for Ro – Ro transport.

- **L.A.S.H (Lighter aboard Ship)–LASH transport** is the combination of deep sea and inland waterway transportation. An example is the route from Germany to the Mississippi Ports where the barges sail down the Rhine, Elbe or Weser in Germany, are loaded onto the LASH container vessels in Rotterdam, Hamburg or Bremen; are then carried across the Atlantic, to be unloaded at the Mississippi delta port to sail upstream in the in the U.S.A., (UNESCAP, 2005). It must be noted that LASH vessels are expensive, and furthermore, it is necessary to check on the availability of the special handling facilities in the ports of destination.

- **Piggyback**—this is a system of unitized multimodal land transportation, a combination of transport by road and rail. It has become popular in Northern America and European countries because it combines the speed of reliability of rail on long hauls with a door – to – door flexibility of road transport for collection and delivery. The goods are packed in trailers and hauled by tractors to the railway station. At the station, the trailers are moved onto railway flat cars and the transport tractors, which stay behind, are then disconnected.
At the destination, tractors again haul the trailers to the warehouse of the consignee. The system has undergone refinement and sophistication by the introduction of the so-called “trailer - train”, which uses the same trailer as a vehicle on the road and a rail vehicle on the rail. In other words the trailer moves on its wheels as a truck on the road but the wheels can be retracted by an air suspension system and connected to a rail “bogie” for movement by rail. At the end of the rail journey, the conversion back to being road vehicle is effected for delivery of the goods to the customers.

- **Sea Train** – This is another innovation in the multimodal transport system involving the use of rail and ocean transport. It was originally adopted in the U.S.A. It is similar to the Roll - On – Roll – Off (Ro-Ro) system except that in the place of the Ro-Ro vehicle a rail car is used so that geographically separated rail system can be connected by the use of an ocean carrier. Typically these vessels are long and thin and consist of one main deck running the length of the ship. They are quicker at loading trains than general cargo vessel since the train’s carriages do not need to be detached from one another.

Use of train transport across Europe has been the phenomenon lately, passenger movement between Britain, France Belgium, Holland and the rest of the countries in the zone is predominantly achieved by trains. Also, the movement of passengers by way of using high speed trains and tube freights. Transportation of refrigerated cargo such as fruits, meats and fish as well as dairy products has gained prominence in the European zone.

The European Union like the United States and the rest of the developed countries have a very solid transport infrastructure with rail, road, air and inland water way as well as pipelines connecting the various states, regions and provinces for easy link to the industries and commercial centers.
These infrastructural facilities have become the backbone of these countries developmental successes, and must be emulated by countries like Ghana with a major prospects and abundant natural resource that can be used to massively transform this economy. All what needs to be done is to set our priorities right, engage in strategic planning and implementation of such plans and strategies in order to set the stage for massive infrastructural development.

2.11 MULTIMODAL TRANSPORT INFRASTRUCTURE

Financing transport infrastructural project has been a difficult management and logistics issue for government, even developed countries are faced with funding problems regarding multimodal infrastructure provision and maintenance, therefore, the need to resort to both conventional and contemporary measures of raising revenue to embark on infrastructural projects.

A workshop held on the 26th of January, 2016, by the Ministry of Transport and Ministry of Road and Highways on ‘Public Expenditure and Institutional Review of the Transport Sector’, revealed that the ministry did not meet its required infrastructural development target earmarked for the year 2015, due to lack of funding (Okran, 2015) the review of the integrated transport plan for the Boankra port project has delayed mainly because the private public partnership initiative has no legal backing in the transport sector to help develop the transport infrastructural projects (Deloitte and Touche, 2016). About 99% of public investment is dedicated to the sub sector of the road transport alone (Deloitte and Touche, 2016). However, these resources and funds are channeled to the transport sector without any benchmarks and adequate performance reviews.

In the United Kingdom, the House of Commons transport select committee was in 2011, accessing the usefulness of the governments ‘draft national policy statement for the future development of National roads and rail network espouses that the main purpose of the national
policy statement is to set out the national need for nationally significant infrastructure projects and therefore makes it clear what type of transport projects should be supported by national policy (Keith Michelle, 2011). He said the MP’s lack focus on strategy and understanding on how it will support the delivery of major transport projects.

Intermodal or multimodal transport policy as stated above is the rule and regulation governing the use of the transport mode and the carriage of goods as is in the international conventions or as in the national laws of the individual states. A multimodal transport document presented at the 1st FIATA – GIFF TOT program discuss the transport convention of carriage of good by road, under the Convention de Merchandises par Route CMR and the national law. The CMR has been ratified only by countries in Europe and road transport in the countries outside Europe is to a great extent govern by national laws and ordinances which vary from country to country. However, it is of benefit to transporters outside Europe to be aware of the conventions as they could then understand the legal regime applicable to movement of cargo when they act as multimodal transport operators, when land transport in Europe forms part of the multimodal transport system (Thomas Sim, 2005). The above transport conventions or policies are able to work and achieve the measureable results because the transport infrastructures are put in place to support the intended purpose. Unlike in this part of the world where the transport infrastructural facilities are not fully or adequately provided and the policy directives are not comprehensively harnessed to ensure the establishment of the infrastructures. In Europe, America and some developed parts of Asia cargoes from long distances or the hinterland going to the farthest parts of the country are mandated to be transported by rail to connect through the inland water way to the final port of destination. It is therefore not permitted by law to carry such cargoes by road across a long distance. Due to these regulations, the multimodal transport infrastructures are fully developed to support the movement of the good and passengers expeditiously.
Therefore, transportation and for that matter multimodal transport requires the medium of which the goods and people are carried in and these mediums need a platform or facilities to accommodate them. The entire various modes have their own peculiar medium and facilities that makes it possible to operate. Land is incidental with road and rail using vehicles to convey the goods. Water transport is either the sea or inland water way and ships or water vessel is used to carry the cargoes. Air is by aeroplanes, predominantly for passengers but now airplanes carry high value cargoes and personal effects. The combination of the various modes of transports to provide haulage or delivery services connecting major terminals such as the sea ports or airports. While road transport engages in pick up and deliveries to the ports or rails for onward delivery to the hinterlands and rails are mostly for long distance haulage from the ports to the inland terminal and inland water way connecting the main ports with cargoes. These require a capital cost and modern mechanized facilities to serve as a platform for the operation or enable an interface between the modes for smooth operation. For the efficient, economic and expeditious movement of goods by road and rail, there should be adequate infrastructural facilities as indicated below;

- Adequate and well maintained roads, including highways designed to carry heavy loads. Poorly maintained roads lead to higher fuel consumption by vehicles, faster wearing of tyres, increased need for spare parts etc; leading to higher operational costs.
- Terminal facilities, which include facilities for the safe and quick loading and unloading operations at the points of origin and destination, sufficient number of docks for loading and unloading trucks, suitable handling of machinery and equipment, adequate parking area, warehouses for storage of goods, weighing machines, weigh bridges, etc.
- Adequate number of vehicles such as trucks and trailers, suitable for the carriage of different type of goods, service centers and sources of supply parts.
For the movement of trucks and heavy vehicles, particularly those carrying containers, roads should satisfy the physical and technical requirements in regard to width, gradient, minimum free height, and etc. Bridges should also be suitably designed for the purpose.

Road transport plays more or less the same role as rail transport in the domestic economy of a country. Rail transport and road transport are often complimentary with rail transport undertaking the long hauls and road transport undertaking the local collection and distribution (Thomas Sim, 2005).

As espoused by Jemima Ansah – Otu in her thesis submitted to the University of Ghana on the topic “challenges and prospects of multimodal transport operations in Ghana”, she stated that ‘over the past decade the world has witnessed strategic considerable developments. The movement towards globalization and trade liberalization paralleled by the revolution in information and communications technologies is continually advancing and significantly altering existing markets and triggering a race for the future’.

‘Apparently a new economic era is materializing and driving more countries toward global economic integration. While partnering and forming alliances are company’s best response, regionalism is emerging as countries powerful option in the face of these on – going global trends. National borders are increasingly disappearing and trade barriers are dismantled. Progressively, these developments require changes in the type and quality of transport and logistics services and infrastructure. Therefore new patterns of infrastructural provision and management of transport have emerged (Al – Muhaisen, 2005).

Multimodal transport is essentially an international through – transport combination with various modes of transport such as ship, rail, truck, airplane etc primarily through the use of containers. Containers will ensure the transport of unitized cargo from its origin to its final destination, with efficiency and least possible risk (Banomyong, 2000).
According to Woxenius (1998) the concept of using freight containers dates from Roman times but container transport by rail was introduced by the Liverpool & Manchester Railway that used Roll – on – Roll – off containers for the hauling of coal back in 1830. The Birmingham & Derby Railway introduced an early form of multimodal transport with the transfer of containers between rail wagons and horse carriage in 1939. New York central Railway developed and inaugurated the first dedicated container service from Cleveland and Chicago on March 19, 1921. Containerization grew further as a means of ‘door to door’ transport spurred on by the development of the Piggy Back System where trailers themselves were carried aboard specialized ‘flat cars’ (ESCAP, 1983). Containers for sea transport appeared during the 1960’s and should be attributed to the innovativeness and the sea/land strategy of Mclean, the founder of Sea – Land Inc. Mclean was originally an executive of a trucking company which took over a shipping company and was therefore familiar with the road / rail combination for land transport, hence the decision to apply the concept with sea transport to enable sea/land provide through transport with the help of standardized dimensions of containers. It follows that containers had to be fitted with special devices for the ease of switch between different modes of transport and that ships had to be equipped with rail structures known as cell – guides for vertical sliding and stowing into the ship’s hold. Containers ultimately enabled multimodal transport to be applied to most types of general cargo by means of an international standardized transport unit. This called for massive infrastructural development and change from the then traditional infrastructure to the current conventional multimodal transport infrastructure to support the use of multimodal facet not only with the advent of containers but also large (out of gage), irregular dimension cargo and particularly heavy cargoes that cannot be containerized. However containerization is basically the largest form of unitization (Banomyong, 2000).

Containers are loaded with cargo at the shipper’s premises and sealed, and then they are carried over to the consignee’s premises intact, without the contents being taken out or re-packed enroute.
This is the essence of container transport as well as multimodal transport, but containerization is not synonymous with multimodal transport. Containerization contributes to a higher efficiency in the development of multimodal transport operations. The focus, now, is more on the organization of the transport industry and the synchronization of the integrated logistical system (Hayuth, 1987).

More importantly, now is the need to have adequate policy and infrastructure facilities to support the transportation of dangerous goods i.e. the transportation of chemicals, explosives and dangerous goods. The transportation of such goods is governed by international regulation. The Accord Dangereux Routier (ADR) is applicable in the case of road. There are also the latest ECE conventions on civil liability for damage caused during carriage of dangerous cargo by road, rail and inland water ways. There are also the recommendations made by the United Nations Committee of experts regarding classification, packing, marking, labeling, storage and transport of dangerous goods to ensure safety of lives and protection of the environment (Thomas Sim, 2010).

While some developed countries that pride themselves with the wherewithal, having all the facilities and policy in place still building consensus on how to refine intermodal transport and policy planning, other developing countries are struggling to put adequate infrastructural facilities in place. But before such facilities can be properly built and serve a better purpose the right policy framework and an action plan is put in place first. According to the vice president of, South Carolina state ports authority, Ship sizes are increasing and increasing exports are helping to create a balance with imports at the ports, while these trends are good for the state, they put pressure on the infrastructure hence the need to invest in multimodal infrastructure to boost transport operation so as to address that pressure (Smith 2014). This will be a new and integrated plan for transportation in South Carolina with an emphasis on commerce and safety. The plan will help us manage the transportation system we have and help us decide how to spend scarce resources to improve the system (Smith 2014). This is the first time I have seen this level of
cooperation at the state agency level. Federal highway authority looks forward to working in this partnership to document the performance of the transportation system, to focus on freight efficiency, and to take advantage of the funding flexibility contained in recent federal programs (Smith, 2014). The state of Carolina has experienced rapid population growth and development in recent years and this growth is expected to continue; hence the demand for passenger travel and movement of freight has grown ever faster than the population. The transportation system impacts almost every element of our lives, including our economy, the environment, our safety and security and most importantly our overall quality of life. An efficient and seamless multimodal transportation system is needed to effectively meet these critical transportation demands and to efficiently move both passenger and freight. Through this planning process, future vision for transportation mobility and efficiency will be defined. Identifying and defining the deficiencies of the transportation systems are crucial in the justification of funding. This plan will emphasize the importance of linking transportation investment to economic development. The key elements of the performance based multimodal plan include developing vision, goals and objectives, formulating performance targets, identifying multimodal transportation needs, estimating future revenues, developing future scenarios, environmental screening, integrating bike and pedestrian planning and safety.

In addition to the state wide multimodal the following individual modal plans will be developed:

- State wide strategic corridors for transport and commerce;
- Interstate highway plan;
- Transit and coordination plan;
- Rail plan and a
- Freight plan
This individual plan in addition to the multimodal transportation plan, will address state and federal requirements including the new surface transportation reauthorization act called moving ahead for progress in the 21st century Act. (MAP - 21).

An article on Transport Policies for the Euro Mediterranean Free Trade Area: An Agenda for Multimodal Transport Reform in Southern Mediterranean”, volume 1, funded by the world bank /European commission program on private participation in Mediterranean Infrastructure (Mullen-Jentsch, Daniel, 2002). The study argues that the 15 European Union (EU) countries and their 12 Mediterranean countries partners should complement their Euro Mediterranean free trade area for industrial goods with a common transport space. This will require the removal of policy - induced frictions in the region’s multimodal transport system in order to facilitate the flow of goods, foods and people, and investment within this emerging trade bloc. The purpose of this report is to identify the bottlenecks and inefficiencies that currently exist and to map out the reforms in the legal, regulatory, and institutional framework that should be implemented to address them. This includes both national and cross border policy measures in the various modes (air, maritime and land base transport) as well as in transport logistics. The study compares sectors performance and sectors policies within the concerned countries and it benchmarks against international best practices. It draws on policy lessons from other developing regimes, such as Latin America and Eastern Europe and assesses the extent to which the policy framework of the EU single market in the transport sector could provide guidance for the creation of a common transport space throughout the Mediterranean region. Consolidating this point even more is the introduction paragraphs of multimodal transport operations which states that multimodal transportation is not a recent discovery since any consignment coming from overseas and going to an inland destination is, in fact, travelling with several means of transport: sea then rail or road or both or even airfreight in some cases. What is new is that, nowadays, such consignment can be made without breaking bulk, the goods arriving in their destinations in the container, vehicle, trailer in which they were
loaded at the place of departure, and often, under cover of one transport document only. This is the result of container "revolution" and the development which has occurred over the last 10 to 20 years with the ro-ro vessel, the trailers or sea ferries and land bridge routes (Thomas Sim, 2005).

On Friday, 17th January, 2014, Joy news on multi TV carried out a story on urban road transport on "Urban Transport Project" concerning the Bus Rapid Transport (BRT) or Transit System (TS) as indicated by government to take off in 2012 since it has been announced in 2011, its now scheduled to take off this year. The bus rapid transport will help ease traffic congestion problems and enhance free flow of traffic and enable smooth transportation of goods and passengers. The urban transport project is to ensure the provision of the following facilities in the urban Center:

- Dedicated bus lanes
- Single and dual carriage lanes
- One way traffic lanes
- Bus terminals
- Bus stops
- Foot bridges etc.

This underscores the earlier assertions of the need for multimodal transport in the country.

The ministry of road and transport has undertaken a study on the "Urban Transport Policy Reform in Ghana. The study enumerated among other things:

The low capacity of the existing road network, and its inefficient use and the inadequate use of transport infrastructural facilities across the entire country is the fundamental problem facing the development of urban transport policy. Within the urban transport policy objectives framework, national transport policy is aimed at achieving the following:

- Making transport operation safe, efficient economically viable
- Ensuring sustained growth in the transport industry through adequate investment
• Strengthening the transport linkages with neighbouring countries (Kwakye E. A et al, 2010).

Both the urban transport project and the urban transport policy reform did not include the policy plan and development of rail infrastructure in connection to the urban road transport planning projects envisage.

With adequate transport infrastructure and an effective policy framework to support the flow of goods and people, and the use and maintenance of the facilities to ensure sustenance, will help the economy to grow equitably across the various regions. As it is referred to in the maritime industry, 'He who owns the transport infrastructures controls the trade'. Providing chains of adequate transport infrastructural facilities linking the seaports, airport with the rails hauling the cargoes over long distances while the roads does the pickup and the delivery and the local distributions, so that the inland water ways will concentrate in connecting between the inter regional connections and serving the neighboring countries and linking the hinterlands and the market centers, to the seaports as well as supplement the rail networks effort in hauling large quantities and irregular dimensions cargoes, making use of economies of transport that the inland water way has to offer.

Currently in Ghana it is the opposite that is being practiced, putting enormous pressure on the road network infrastructure. The ideal situation is to develop all the modes uniformly so that they can complement each other in order to optimize the outcome of the multimodal transportation in Ghana like elsewhere in the developed countries.

2.12 POLICY DRAFTS ON TRANSPORT IN GHANA

A transport policy draft on "the urban transport policy reform in Ghana" written by E. A. Kwakye, the Director of Planning and P. R. Fouracre, urban transport advisor, both at the ministry of transport.
Incept of the abstract of the policy draft stated that “to address Ghana’s urban transport problems required policies and strategies which aim to meet broad objectives concerned with enhancing the effectiveness, efficiency and affordability of the urban transport sector, bearing in mind that the overall aim of its development is to contribute to the improvement in the quality of life of the community. A comprehensive package of measures was developed within this general framework, which came to be known as the Urban Transport Project (UTP) (Ministry of Transport, 1998).

The purpose of an urban transport policy is to establish the means by which Government sets out to achieve its urban transport objectives in support of national and urban development aims. In general, the development of urban transport takes place within the wider context of national and urban development. There are four aspects of this which have an important impact on urban transport in Ghana, namely:

1. The Economic Recovery Programme (ERP) launched in 1983, and followed by the Structural Adjustment Programme (SAP). This is putting increasing emphasis on self-sufficiency, private enterprise and Government divestment of state-owned companies. This leave Government’s role to the regulation and taxation of urban transport operators, and control of infrastructure investment and maintenance.

2. The Government’s Vision 2020 programme which seek to build upon the foundation laid by the earlier ERP, has the objective of raising Ghana to the level of middle-income country by 2020.

3. The Government’s decentralisation programme, under which powers and responsibilities are being devolved from the Central Government to the regional metropolitan capital and District Assembly administrative levels. It is anticipated that in the longer term the planning and development of urban transport in the country will be subjected to this process.
4. The high urban growth rate in the country is outpacing the provision of services, and its taking place in a largely unplanned manner, making it difficult to plan and programme transport in harmony with urban development in the cities.

The urban transport system in Ghana is characterized by the congested central areas of the cities, poor quality of service from public transport operators, high exposure to road accidents, and poor environmental standards. This is seen in long commuting times and journey delays, lengthy waiting time for public transport both at and between terminals, high accidents rates, and localized poor air quality.

These have resulted from the following factors:

- Lorry - park organisation and management, which restrict the optimum use of the available public transport capacity.
- The use of small vehicles for public transportation, which contribute significantly to congestion on the roads.
- The low affordability threshold of the majority of the urban poor, who can only meet low public transport tariffs.
- Lack of funding (local and foreign) available to operators, who are thus unable to replace their existing vehicle stock with more modern, efficient and comfortable buses.
- The low capacity of the existing road network and its inefficient use.
- Poor planning and control procedures for land - use development, resulting in an additional traffic congestion and safety hazards.
- The low standards of road traffic awareness, vehicle maintenance, and driver behaviour which contribute to the high accident rates, particularly amongst pedestrians and children.
- The poor upkeep of vehicles which causes excessive vehicular emissions.

To address these urban transport problems requires a strategy which aims to meet broad policy objectives concern with enhancing the effectiveness, efficiency and affordability of the sector,
bearing in mind that the overall aim of urban transport development is to contribute to the improvement in the quality of life in the community.

In line with the objectives of Ghana’s Vision 2020, the key policy objective for the transport sector is to establish an efficient and modally complementary and integrated transport network for the movement of people and goods at least cost throughout the country.

Inclusion of the Urban Transport Program has provided a comprehensive approach tackling Ghana’s urban transport problems. With combine infrastructure development as well as organizational and regulatory changes. It is expected that the outcome will lead to enhanced urban transport performance which can be sustained by the reorganized legislation and institutions.

Ghana Shared Growth And Development Agenda (GSGDA), medium – term national development policy framework, 2010- 2013, policy framework volume 1, written by National Development Planning Commission (NDPC) has espoused in the policy report on the topic of transportation with its modal attributes such as road, railway, maritime, riverine transport and aviation.

‘Transportation plays an important role in the economy of Ghana. It facilitates haulage of goods, movement of people and the general integration of the rural urban economies. The various modes of transportation within the sector are road, rail, air, inland water, push carts, animal drawn carts. Among these, road is the principal means of transport in the country.

The key challenges that confronts the entire transportation sector include: inadequate development of an inter-modal transport system; poor inter-modal facilities; inadequate funding for maintenance, upgrading and rehabilitation of existing infrastructure and management for all modes of transport; poor coordination and cooperation among relevant institution; inadequate and unfriendly walk ways for persons with disabilities; and un-integrated approach to transport planning and development. Key policy objectives that will be pursued to address the challenges in the entire transport sector are as follows:
Establish Ghana as a transportation hub for the West African sub-region; integrate land use, transport planning and development planning and service provision; and ensure sustainable development in the transport sectors. Specific challenges and policy interventions for key modes of transportation are presented in the sectors below;

2.13 ROADS AND HIGHWAYS

Ghana’s road network consists of 66,220 kilometers of roads. This is made up of 42,192km of feeder roads, 12,400km of urban roads and 11,628km of trunk roads. The network is comprehensive and links all districts and regions, and also provides access to a large number of settlements. Extensive use of road transport in relation to other forms of transport and poor maintenance of roads have however, led to pre-nature deterioration of the road network, congestion on roads and highway, especially in the urban areas, and an increase in road traffic accident. Currently, 41% of the road network is in good condition, 27% is in fair condition.

To address this challenges in the medium-term and enhance road transport, the following policy objectives will be pursued; prioritize the maintenance of existing road infrastructure to reduce Vehicle Operating Cost (VOC) and future rehabilitation cost; improve accessibility by determining key centers of population, production and tourism; re-instate labour-base methods of road construction and maintenance to improve rural roads and maximize employment opportunities; implement urban transport project such as the Ghana Urban Transport Project (GUTP) including the Bus Rapid Transit (BRT) and school bussing schemes; explore Public-Private Partnerships (PPPs) concessions options for investment in transport infrastructure and services (single and multi-modal options); build capacity of local road contractors and consultants, and ensure their proper classification use; and develop the institutional and regulatory arrangement for ensuring the most effective and efficient movement of freight and passengers.
2.14 RAILWAY NETWORK

Ghana’s existing rail network is confined mostly to the southern part of the country which is economically more advanced and has a higher population density. The total rail track length is 1,300 kilometers. Minerals constitute the main bulk traffic on the network, but cocoa and timber traffic contribute immensely to the earnings of the operating company. Limited passenger train services are provided on the network. The current rail network is characterized by old tracks and inadequate railway terminals and platforms. The existing railway network should be rehabilitated in some cases, and totally re-built in others, modernized and expanded to support the new oil and gas industry as well as to ease pressure and congestion on the roads and highways.

2.15 AVIATION

The main focus of aviation infrastructure is to modernize airports other than Accra to enable them play their respective roles in meeting the demand for domestic flights. These include the ten airfields/airstrips located in each of the regions of the country and the four domestic airports at Accra, Takoradi, Kumasi and Tamale.

The facilities at the Kotoka International Airport is being refurbished and must be sustained and progressively improved to make Accra a West African hub and gateway that will lead to growth in exports and tourism. Domestic air services will be encouraged through tax incentives for locally based airlines. In terms of strategies, attention will be given to ensuring that Ghana complies with, and sustains international safety and security standards at all its airports.

2.16 LAKE AND SEA TRANSPORT

Ghana has two deep water ports in Tema and Takoradi. There are also a few smaller ports (Akosombo, Buipe, Yapei and Debre) where freight is moved by surfboats and lighters. Most of
Ghana’s imports and exports are handled at the two main ports which have had extensive rehabilitation over the years. Although they handle large volumes of cargo, the performance of the ports is constrained by an increasing level of congestion, and longer cargo dwell time.

The Volta Lake Transport systems on the other hand, spans about 450 kilometers from the south to the north, with major ferry crossing at Yeji, Kete-Krachi, Dambai, Adawso and Kpando. It is responsible for transporting petroleum and agricultural products as well as passengers especially those living across the lake. Periodic drop in the level of the lake, however, inhibits longitudinal movement. There is also the problem of ageing equipment, and underwater obstructions to safe navigation. These problems will be addressed among others by dredging, removal of tree stumps from the Lake and procurement of additional boats, ferries, etc to transform the Volta Lake Transport system into an effective transport system (Ministry of Transport, 2012).

2.17 FINANCING TRANSPORT INFRASTRUCTURE

Financing transport infrastructural projects in Ghana is normally from donor funding which always come with certain conditionalities. Also, the national budget, which is always in deficit, most of the time envisage the funding of transport infrastructures. These infrastructures due to the way they are manned and run are not able to pay for themselves. National transport policy must set down how strategic infrastructure is to be planned, evaluated, developed and financed – as well as develop a solid basis for communication with stakeholders and the public.

National framework needs to highlight the importance of strategic infrastructure. As the European commission now recognizes, there need to be a focus on strategic, multimodal ‘core works’ that can be funded and will be able to handle the major share of the future growth and transport tasks.

A recurrent concern is that many countries do not assign the same priority accorded gateway ports to the key inland rail, road and the waterway connections required to move freight between the
gateway ports and the cities and industrial areas in the hinterlands they serve. There needs to be a (new) infrastructure category that actually includes the major international gateways and their key inland connections.

A well performing transport network requires substantial resources to maintain the quality and condition of the infrastructure and to meet future needs. In some developed countries like the United Kingdom and the USA, national and local governments and their ports mostly retain primary responsibility for their gateway ports infrastructure provision and regulation, as well as for inland road and rail transport infrastructure. Major infrastructure is funded directly from the government budgets.

In countries with major transport infrastructure that are dependent on government funding, there are real concerns that given the post-crisis fiscal situation, future funding of the inland transport infrastructure from traditional sources will 'dry up'—at the same time as infrastructure needs are increasing quickly.

Improved funding arrangement are needed to ensure secure funding and funding levels consistent with the strategic infrastructure needs.

The modern ways of funding major transport infrastructure projects are:

- Multi-year funding for strategic/major projects, supported by dedicated project specific organisational and funding structures.
- Fully funding an entire multimodal programme of infrastructure projects for ten years. One example is the Danish government approval of a full multimodal land transport programme to 2020 with its infrastructure fund providing the secure funding needed for that period. Another is the Swiss infrastructure funds established for special financing of road traffic (1958) and major railway projects (1998). Also, in 2008, Switzerland established a new infrastructure fund for completion of the motorway network and metropolitan transport (rail and road) projects.
• Allowing savings on approved projects costs to be retained for future programme funding. These and other options can help balance long term needs and the economic advantage of investing in infrastructure against short term pressures and the costs and consequences of not investing.

In some countries with a high quality of overall infrastructure, diversified infrastructure funds play an important role in delivering projects and programme funding. They could play a role in countries that are reliant solely or primarily on budget funding.

Such long term funds are likely to have:

• Ear-marked multiple source of funding – eg. Budgets, fuel taxes, user charges, savings.
• Some cross-financing from road taxes and revenue to rail/public transport infrastructure
• Any funding reviews signalled well in advance.

However, in many countries, private sector financing has proved important in helping deliver the equity and debt financing needed to make infrastructure projects operational. Private sector involvement can also help manage the transition to user-pay/self-financing investments.

2.18 MULTIMODAL TRANSPORT POLICY FRAMEWORK INITIATIVE IN UK

The United Kingdom for example more than five decades ago had linked its hinterlands, industries, commercial centers with the major sea ports and terminals by way of multimodal transport arrangements supported by relevant transport policies and initiatives to ensure seamless transportation of goods and movement of passengers. Transport policy and infrastructure requirement depend on country to country, and so is the capital outlay needed to put up the facilities, while some countries have a vast land and sparse regional connections, others are either an island or a very small country. When the country’s land space is bigger, rail connections become the most reliable network that must be linked by road and inland waterway and air.
However, a relatively smaller country such as the UK will not require too much of rail and inland water way connections like the USA. Countries, that border other countries will engage in trade and therefore will need to connect by rail, road, inland water ways etc.

The United Kingdom, have done effective national transport infrastructural planning long ago and had put all the adequate transport infrastructure facilities in place to ensure effective transportation of all modes. Currently, the UK has been investing in streamlining the multimodal transportation to efficiently reduce carbon emission and traffic congestion. Policy initiatives have been roll out to encourage passengers and commuters to use cycling and car sharing and other methods to improve and regulate effective and efficient multimodalism in the UK.

The UK multimodal transportation planning as reviewed by Victoria Transport Policy Institute put the various multimodal transport modes into categories according to choice and availability of space. The UK is basically concern with traffic congestion and emission of CO₂ into the atmosphere. It is therefore investing in high speed trains and tunnels and use of ferries to connect cities and discouraging the use of individual transportations in order to reduce traffic on the roads.

The use of heavy and light rail transits with very high speed, operating entirely on separate rights-of-way, with infrequent stops, providing service between urban and commercial centers and stations, are limited to major corridors in large cities. Street cars also called Trams and Trolleys, operating primarily on urban cities with low speeds with frequent stops. Fixed route buses on scheduled routes, Express buses and Bus Rapid Transit, with limited bus stops designed for commuters and special events are also limited to special corridors and urban centers.

The para-transit, personal rapid transits, shared taxis and taxis, widely available and limited to busy corridors. Ferry services are limited to major corridors; boats are used to transport people and vehicles. In these areas, people are encouraged to use bicycles and or share taxis to eliminate or reduce traffic congestion (T. Litman, 2014).
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

A method of research, ranges from empirical, historical, longitudinal, attitudinal, experimental, behavioral, statistical, and surveys. Most research works usually transcend the boundary of a particular approach to embrace variety, in an attempt by the researcher to currently define the problem, formulate research questions, collect methodologies and critically analyze data, interpret and report findings.

This section focuses on the methodology used for conducting the study. It indicates the choice of study area, sampling size, and research design and data sources. It also describes the data collection procedures and the method of analysis of results obtained from the field work. There are many methodological approaches for handling a research.

3.1 THE AREA OF THE STUDY

Looking at the wide area multimodal transport operations cover in Ghana, the researcher considers the need to limit himself to the liquid transportation through pipelines via fuel barges by inland water ways. The transportation of bulk cement by trucks and onward transport via inland water ways. Also, transporting passengers and goods by train and buses as well as transporting goods across the country. The research also seeks to explore the possibility of relevant policies and legal regimes to support the transport sectors. The various bulk transporters and shippers and or regulators to be featured are:

- Bulk oil storage and transportation company (BOST).
- Ghana Cement Company limited.
- Volta Lake Transport Company Limited.
- Ghana Rail Way Authority.
- Ministry Of Transport.
The targeted population for this study includes truck operators, cargo owners and passengers as well as officials of the regulatory agencies.

The selection of the transport operators, shippers and the regulatory bodies and agencies is based on their tonnage capacity, transportation frequency and mostly their commercial involvement with the market centers and the various modes of transport in Ghana.

3.2 SAMPLE SIZE

The pragmatic aspect of sampling is time consuming, such consideration, invariably affect the size of the sample to be determined. Due to time and monetary constraints the research has to consider a sample size of 300 for the survey of the five (5) identified organizations for the survey and their auxiliary truckers, shippers and passengers. The heads of the various organizations will be scheduled for a structured interview, their subordinate managers and officers, the users of their transport services such as cargo owners and truckers will be given questionnaires to fill.

The Directors and the managers of GHACEM, BOST, Ghana Railways Authority, Ghana Highways and the Transport Ministry will be interviewed. The interviews will be structured and conducted in a broader perspective, narrowing it on transport infrastructure and policy framework that will support multimodal transport operations in Ghana. In addition to the managers from the various organizations to be interviewed, four supervisors or officers each will also be interviewed; 25 other employees will fill the questionnaires prepared for the various organizations. The remaining 30 questionnaires will be filled by truckers, shippers and passenger. This makes the sample size 30 persons per organization but 60 persons per identifiable group, in all 300 persons from whom data was collected.
3.3 METHOD OF SAMPLING

In identifying the sample for the survey, the research first used the purposive sampling method in identifying users and operators of the multimodal transport operations. In addition to using the purposive sampling methods to select users and operators whose commercial activities involve the use of transport, the researcher used the systematic method of sampling in order to give an equal chance of selecting the sample units.

The purposive sampling method was used to select the following officials from the supervisory and regulatory agencies as well as the other organizations using the services of the transport operations. Namely:

- Head of Ministry of Transport
- Head of Bulk Oil Storage and Transportation Company Limited
- Head of Ghana Railway Lines Authority
- Head of GHACEM and
- Head of Volta Lake Transport Company Limited

Table 1.0 Distribution of the targeted group by sample size:

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<tr>
<th>RESPONDENTS</th>
<th>SAMPLE SIZE</th>
<th>SAMPLING METHOD</th>
<th>INSTRUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transporters</td>
<td>50</td>
<td>Purposive</td>
<td>Interviews/</td>
</tr>
<tr>
<td>Shippers</td>
<td>50</td>
<td>Purposive</td>
<td>questionnaires</td>
</tr>
<tr>
<td>Management staff</td>
<td>150</td>
<td>Purposive</td>
<td>Interviews/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>questionnaires</td>
</tr>
<tr>
<td>Passengers</td>
<td>50</td>
<td>purposive</td>
<td>Interviews/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>questionnaires</td>
</tr>
</tbody>
</table>
3.4 THE RESEARCH INSTRUMENTS

Due to the commercial activities and the partnership that exist between the various respondents under the research operations, the individual assisted questionnaires was chosen to supplement the in-depth interview techniques. The interviews were conducted for the heads of the organizations and the departmental heads or their managers while separate questionnaires were administered, one for the users or shippers and the other for truckers as well as passengers. Additionally, a diagnostic technique such as simple statistics was used to interview the respective officials enumerated above according to their areas of specializations and exposure so as to encourage detailed discussion on the problem from diverse and well informed perspectives. Even though interviewer prepared questions for guidance, the diagnostic technique allows the interview process to flow naturally and not necessarily following sequentially prepared interview questions. Also, the researcher made use of a recorder to facilitate the interview process and avoided interruptions thus allowing for relaxed discussions.

3.5 RESEARCH DESIGN

The researcher proposes the survey research strategy to obtain primary data. The survey is a qualitative research strategy used to collect information from a relatively large group of people by means of interviews and questionnaires. Primary data was obtained from the truckers, shippers and the passengers of the transport operations by the use of questionnaires to enable the findings reflect the thought of the entire population. Both close and open ended questions were deployed in the questionnaires. Accordingly, the interview method was used to collect primary data from the officials of the organizations outlined above. The interviewer’s guide was the instrument used for the interview. The primary method employed in the information collection for this project was based on diagnostic interview with the heads of the organizations ear marked including the Ministry of Roads and Transport.
based on diagnostic interview with the heads of the organizations earmarked including the Ministry of Roads and Transport.

To get the required information therefore, discussions were centered on:

- The structure and infrastructural facilities of the transport sector;
- The national transport policy framework;
- Multimodal transport facet;
- Investment in infrastructure and maintenance of the facilities;
- Revenue generated by the transport sector to ensure sustainability;

Secondary information collected through this method was obtained largely from the Ministry of transport annual report and the national transport draft policy framework, newspapers, news items, magazines, conference papers and the internet sources and textbooks. In the attempt to gather more relevant information for this study, the researcher visited the various organizations.

3.6 DATA COLLECTION

Administering of the questionnaires was taken by the researcher himself, some of the truckers and passengers and other respondents needed to be guided through by way of interpreting the questions to them. In the case of the organization and the others, the research covered a sample size of three hundred (300) from the five organizations, transporters, shippers, passengers.

3.7 METHOD OF DATA ANALYSIS

Due to the nature of the study, relevant and sufficient analytical approach such as simple statistics and sense of judgment were employed in analyzing the data. Data from the field that are classified as primary data was able to derive relevant responses from the respondents.
CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA AND INTERPRETATION OF FINDINGS

4.0 INTRODUCTION

This chapter describes in details the result of the field studies and observations. It also presents the draft transport policies in Ghana, as well as the views of major transporters, shippers, operators and agencies and authorities. As mentioned in the previous chapter, various sets of questionnaires were administered to three hundred (300) people ranging from transport operators, train and truckers, shippers and passengers. Out of the three hundred (300), questionnaires sent out to the various organizations and agencies. Out of the total, sixty each went to transport operators, train and truckers, shippers of goods and services, truck drivers and the ministries and agencies for the two areas of the study - The transport policy and the transport infrastructure facilities that supports the movement of goods and people by way of multimodal transport. The review of the transport policy was presented first, followed by that of the transport infrastructure facilities to ensure the operationalization of the policy frame work. The results of the in depth interview conducted with the Volta Lake Transport Company Limited’s Managing Director and the Marine Operations Manager and the interview with the Ghana Cement Company Limited’s Commercial Manager was also analyzed in detail. The primary objective of this section of the report is to address the research and the research questions of the transport policies to scrutinize and review the analysis.

4.1 DEMOGRAPHIC INFORMATION

The study deemed it relevant to assess some demographic characteristics as it is in line with the study objectives and outline in the questionnaires and the interview guide. The elements provided auxiliary information about the respondents and analysis of such information supports the main
analysis pertaining to the research. These include educational background, position and years of working or transport operation or transportation of goods.

4.2 ANALYSIS OF TRANSPORT OPERATORS, SHIPPERS AND USERS

Background of respondents was based on age, gender and education. From survey conducted, majority of the employees of the transport operators, shippers and users or truck operators are males only a few are female. Hence it is safe to say that the sample was made up of a dominant male population. As shown in table 4.1 below, from the respondent of the transport operators, shippers and users were 252 male, recording a percentage of 82 percent, while only 48 were female recording a percentage of 16%.

Table 4.1  Sex of Transporters, Shippers and Passengers.

<table>
<thead>
<tr>
<th>GENDER</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>252</td>
<td>84</td>
</tr>
<tr>
<td>Female</td>
<td>48</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3 EDUCATIONAL BACKGROUND OF TRANSPORT OPERATORS, SHIPPERS AND USERS.

As can be seen from the chart below, in terms of education, about 15% of the transport operators and shippers are graduates-university degree holders. About 35% of the transporters, shippers and users are tertiary level certificate holders, making this group of the population the second highest while the least categories of the group are high school graduates, making about 50%.
Hence from the chart, most of the respondents are fairly educated and understands the issues. Few are even authorities in the field they work. The sector even though have about half of its populace not highly educated, most of the labor force however, are middle school or secondary school leavers but because they have been in the sector for long, answering the questionnaires was not a burden.

Table 4.2 Educational Background Of Transporters Shippers And Users.

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree and above</td>
<td>50</td>
<td>16.7</td>
</tr>
<tr>
<td>Tertiary/ Diploma</td>
<td>100</td>
<td>33.3</td>
</tr>
<tr>
<td>High school</td>
<td>150</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4 LENGTH OF STAY IN SERVICE.

The transport organizations themselves have been operational for some time now. Some of the shippers have been in operation for about 47 years. The users or truckers have used these facilities for more than 10 years now. The respondents have however been in the service for some time now.

The respondents at the transport operations have been in active service for about 15 years averagely. The respondent of shippers of the goods have been in active service for about 11 years averagely. The users have been in active service for about 25 years averagely.
Figure 4.3   Length of Service or Activities

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>NO. OF YEARS</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizations and management staff</td>
<td>Above 50</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Passengers/shippers</td>
<td>15 to 30</td>
<td>150</td>
<td>50</td>
</tr>
<tr>
<td>Operators</td>
<td>1 to 15</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5 DATA PRESENTATION

The response from the main clients that the transporters do business with has indicated clearly how each mode of transport is incidental to the other modes. The transporters and the shippers who move their goods by water, rail or road also engage truckers to transport the goods from one point to another, usually from the ports to the factories and from the factories to the terminals for onwards deliveries or to the market centers. As these goods move and change hands, they change their modes of transport as well. Major transport operators such as Volta Lake Transport Company Limited and JVC Logistics Limited are the sole transporters via inland water way and road from their factories to all their depots across the entire country.

BOST is also a major transporter of bulk oil through pipelines, trailer trucks from the refinery or depot in Tema to their storage facilities across the country—Juapong, Akosombo, Buipe etc. BOST also uses the services of Volta lake transport company limited and Lovely Transport Limited (trucks) to transport liquid cargoes as well as via inland water transport. Volta lake Transport Company Limited does ferrying of passengers and carrying of other general goods and passengers between the northern parts—Buipe port, Yeji, Kete-Krachi and the south. There are rail lines linking some part of the country to the market centers and the
ports, carrying passengers and other goods. Shippers were with the view that there are no visible transport policies relating to multimodal transport. Shippers also reiterated that multimodal transportation in bulk enables transport economics and eliminates break bulk.

Table 4.4 Preference of multimodal transport in Ghana

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference of multimodalism in</td>
<td>200</td>
<td>66.7</td>
</tr>
<tr>
<td>Ghana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non preference of multimodalism</td>
<td>100</td>
<td>33.3</td>
</tr>
<tr>
<td>in Ghana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

The Commercial Manager of Ghana Cement Company Limited, Kwasi Kyere alluded to the fact that, there are few notable transport policies in the transport sector, but those transport policies are making their operations uncompetitive. He cited restriction on axle weight and driver hours' regulation. He also asserted that his company transports the goods in bulk via road and inland water way transport but the transport infrastructure in the country is unreliable. He stated that even though his organization is well equipped to carry out this transport functions, there are no policies to ensure that the transport modes are supplementary and incidental to each other to facilitate the movement of the goods expeditiously in larger quantities. He was not sure if there is any existing legal framework or policy that supports the transport operations in Ghana. He added that the rail network and inland water way should be developed to give shippers a better and more economical option since those transport modes can move cargoes in large quantities than road transport.

The Marine Operations Manager of Volta Lake Transport Company Limited, Captain Emmanuel Ofoe, stated that there are adequate national transport policies in their draft stages in the transport sectors in Ghana that can support multimodal transport operations but there are not adequate
transport infrastructural facilities in place to drive those policies hence the need to harmonize all the relevant transport policy statements into an action plan. He cited the “transport sector project’s inception report and the draft survey plan – regulations and an organizational development plan for maritime authority’s rapid mobilization to regulate inland water transportation” and the “Eastern Corridor Multi – Modal Transport Projects (ECMMTP)” that are underway to make the lake transport viable and more accessible by road and rail to facilitate intra trade. The ECMMTP includes the rehabilitation of the Tema-Juapong-Hohoe-Kpandai-Yendi road, and the refurbishment of the Buipe and Akosombo ports, into a modern transit container handling port, revamp the four existing ferry stations and their landing sites at the over banks and build six new ones along the lake linking the farming communities in the Northern, Brong- Ahafo, Eastern and the Volta regions together. The project will also comprise the construction of a rail road from Tema port to Akosombo port and from Buipe port to Paga. Captain Ofoe stated that this project is the project that will make multimodal transport operation a reality in Ghana. It will land the country into a light industrial and manufacturing industry. He also pointed out that the outmoded infrastructure, poor road linkages to inland ports and the fact that the lake is not charted does not promote smooth operation and hinders navigation. Instead of being complimentary, the road transport operators are competing with the inland water way due to the lack of modern vessels and high capacity of cargo barges to enable us carry more cargoes. He said inadequate investment in the handling equipment is also a problem in the inland water sector. He stressed that the water transport being considered as a service to communities along the lake is not making the company break even let alone make some profit to invest in building additional capacity to operate efficiently. On the transport policy framework on bulk cargo transportation and carriage, he said hauling of fuel by road instead of the pipeline is affecting the inland water transportation business and therefore that transport arrangement must be re-looked at. The manager was with the view that water transport and rail transport provide cheaper transportation to the communities along the
lake and the hinterland to enhance agricultural activities especially food production. The policy that gave rise to the use of wooden canoes on the lake as an alternate transportation is adverse and causing rampant accidents on the lake and must be reviewed. When the ECMMP project is completed, the catchment areas and the communities along the lake will see a massive improvement in the ferry activities, there will be water buses, mini fiber class boats and bigger vessels engaging in the transportation of the people and cargoes, ferry passengers to and fro to embark on their daily activities. He stated also that the various outlets and ports/ferry stations are in dire need of reconstruction of the landing sites. The need to refurbish the ferries and the other ancillary facilities that will enhance effective and efficient operations at the four ferry stations and two ports that Volta Lake Transport Company owns is eminent.

The response from truck drivers about transport policies and infrastructures, show that the policy on axle load restriction and driver hours behind the wheel is the major concern of the drivers in addition to the bad nature of the roads and lack of adequate road facilities such as rest stops, bus stops, climbing lanes for heavy vehicles, vehicular terminals and inadequate space on the shoulders of the road causing pedestrian discomfort. The arrangement to transport cargo in large quantities via the inland water must be backed by regulations, so as to ensure its sustenance. This arrangement was made to ensure the protection from deterioration, particularly, from truck overloading and putting pressure on the roads causing them to wear and develop pot holes in no time.

While the Transport ministries, Volta Lake Transport and GHACEM are looking at ways of expanding infrastructure and formulating policies, fleets of vessels and trucks respectively, the truckers, passengers and the road users are concerned about the nature of our roads and how far they travel on very bad roads and long routes to get to transport their wares or get to their final destinations. All respondent welcome the idea of multimodalism in Ghana to solving the transportation disconnect in the country. As it is now, the regions seem to be very far away from
each other, but, really it is only so because they are linked to the large extent by road. Actually, by
water the Volta, Brong – Ahafo, Eastern and the Northern can be linked in the matter of hours.
The distance between them – from Yeji in the Brong – Ahafo region to Kete-Krachi in the Volta
region, and from Akosombo port in the Eastern region to Kete – Krachi port in the Volta region,
and Dambai port in the Volta region to Buipe port in the Northern region is not more than 200
Nautical miles.

4.6 DATA ANALYSIS

It can be observed in the study that one common concern was shared by the respondent. The
passengers, operators, road users and the authorities all want the transport network to be improved
and the various modes of transport fused to enable adequate intermodal transport operations to
take off in Ghana. Also, they all want to use the shortest routes to enable them transport their
cargo and reach their final destination safely and fast. While a cross section of the respondents
believe water transport is already developed and focus must be shifted to the rail and road
networks others believe road has had its fair share of the development and it is time to develop the
rail and water. The rest of the respondents believe a lot of funding and development must be put in
the various sectors to develop and expand them holistically and equally to supplement each other.
Air transportation has not received much favor from the respondents with the simple reason that
the cost of flying and the time it takes to buy a ticket or book for a flight for such short distances
will rather cause undue delay, so the airports in the northern parts, western parts and the southern
parts are already serving their purpose. However, if another airport can be situated in the Volta
part of the country and make rail road incidental to the airports to link other users by both road and
rail in order to make the airport easily assessable and complementary to the other modes.
Table 4.5 Adequate infrastructural facilities for multimodalism in Ghana

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate infrastructure for multimodalism in Ghana</td>
<td>240</td>
<td>80</td>
</tr>
<tr>
<td>Adequate infrastructure for multimodalism in Ghana</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

On the transport infrastructure, majority of the respondents do not think we have adequate facilities in place to be able to engage in the multimodal transport operation yet. The passenger lamented on the lack of good roads, foot bridges and terminals, while the truckers lamented on the inadequate infrastructures like bridges, road shoulders, pavements and narrow nature of the roads. The operators are more concerned about the tolls bridges and axle weighing scales on the roads for tonnage restrictions and the lack of climbing lanes at some parts of the roads that are hilly and a bit difficult for the heavy duty cargo trucks to climb.

The government agencies and the ministries that have the mandate to provide, develop and maintain the roads are with the opinion that the capital involved in the development of the transport sector for that matter the kind of infrastructure to support the multimodal transport is huge and lamented that the users will not be willing to pay the commensurate charges in tolls and fees in order to recoup the capital expended on those project so as to provide adequate maintenance on the facilities.

On the multimodal transport policy and regulation, all the respondents alluded to the fact that there is not much to show for it. Government has also stressed that different policy documents and regulatory frameworks such as ‘the urban transport network policy’, ‘Ghana shared development growth policy document, ‘bus rapid transport’ are being put together, some they say are in their draft stages, others are in their final preparatory stages and elementary consultative stages yet to be
rolled out for approval before implementation and use. It was strongly suggested that even when the policy and regulations are ready there must be adequate infrastructure to support the use of those policies (Ministry of Transport, 2012). Government is putting plans in place to provide those facilities to merit the smooth operation or implementation of the intermodalism in the transport sector. According to the Ministry of Transport, Government and other stakeholders like the Ghana Maritime Authority, Shippers Counsel, Volta Lake Transport Company, Ghana Highways, Ghana Port and Harbors Authority and Urban Transport among others are working vehemently on how to decongest our roads, ports and harbors by way of expanding and developing the other transport modes such as roads, rail lines and inland water ways and inland clearing depots to ensure that the cargoes are being taking care of as soon as they arrive at the seaport. This will ensure free flow of goods and traffic and also optimum use of rail, water and roads network and making the transport sector vibrant.

Table 4.6 Relevant policies and regulations in Ghana for multimodalism

<table>
<thead>
<tr>
<th>RESPONDENTS</th>
<th>FREQUENCY</th>
<th>PERCENTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate relevant policies and regulation for multimodalism in Ghana</td>
<td>200</td>
<td>66.7</td>
</tr>
<tr>
<td>Relevent policies and regulations for multimodalism in Ghana</td>
<td>100</td>
<td>33.3</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 SUMMARY

The transport system in Ghana has not been fully developed, in spite of the commercial use of the inland water transport, rail line service, road and pipelines for some time now. Governments after another have made some interventions but the situation recurs after a short period of sustenance due to the knee jerk reaction method of intervention. The situation has not been carefully studied, planned and strategically followed through with the tailored policy framework and the infrastructural facilities to implement. Much is yet to be done in the area of adequate infrastructure and the right policies to make the transportation systems viable. Much of the economic activities that goes on in the parts of the regions along the Volta lake and its environs are transport induced, and inland water transport and rail transport supplemented by road transport will make lives better in those areas. Unimodal transport operations have been with us since independence and most of our transport infrastructural facilities has not changed or seen any face lift. This puts constraints on the effective and efficient use of the systems. Making it impossible for the users to move expeditiously, goods and people from place to place without wasting precious time and resources. Not too long ago, the road infrastructural networks worldwide shifted from single carriage to dual carriage and quite recently the road networks are seeing another shift to complex carriage ways. Ghana is yet to see the paradigm shifts in the transport sector. These shifts were informed by the growing population and transport needs and increasing demand for transport, and in order to ensure sanity and safety on our roads, transport planners always need to upgrade the transportation systems to meet users’ demand and standards of operation. Connecting the various mode of transport to facilitate smooth movement of goods and services is not a new trend, and so Ghana should be able to as a matter of urgency shift from the unimodal transport operation to a multimodal transport operation so as to decongest our roads, ports, terminals and provide engine
for economic growth in the other sectors of our society by way of state of the art transportation systems. The reasons why successive governments fail to provide adequate transport infrastructures uniformly across the country is due to the huge initial capital outlay. Therefore, Ghana as a country should employ sustainable and modern ways of financing transport infrastructure projects.

5.1 CONCLUSION

Some of the problems can be traced to the government policies as well as the transporters and other agencies whose responsibilities are to see to the establishment, renovation and improvement of transport infrastructural network in Ghana. Today, countries are changing their approach to sourcing and funding of public facilities such as transport infrastructure. It is no longer lucrative to spend state funds in public sectors that cannot pay for off; therefore, prudent governments are seeking the participation of the private partners to invest in the transport sectors to ensure state of the art facilities that has huge capital costs. These projects eventually will last longer and will offset the debt due to the investor’s involvement in the operation and maintenance of the facilities.

As can be seen from the study and evidently so from the previous chapters, the absence of the visible transport policies and infrastructural provisions to ensure multimodal transport operation is the fundamental problem facing the transport sector in Ghana. The right transport policy framework and adequate transport infrastructural facilities are needed to enable a shift from a unimodal transport operation to a multimodal transport operation in Ghana. The policies exist but in draft forms and scattered in various documents and in different individual organizations or agency’s policy directive that has not been implemented. Infrastructural facilities are nothing to write home about, particularly in the inland transport subsector and the rail transport subsector. While the road transport and the aviation subsectors are doing fairly well yet still not up to international standards that can support multimodalism in Ghana. This is because about 99 percent
of the funding from the state goes to the road transport subsector. The state of the other modes of transport such as rail, pipeline and inland water way is shambolic and appalling and therefore cannot adequately support multimodal transport operation. Much should be done in the area of policy regulation that will provide the platform and basis to transform the infrastructural facilities that will make multimodal transport possible.

The Volta Lake picking its source from the far northern part and connecting the sea in itself should have been a major opportunity for Ghana due to its thorough navigable access from international waters to local inland water way, but planners and logisticians did not harness that opportunity. The building of the fixed bridges and the hydro - electric dams on the lake has made it not thorough though navigable but partially, but could be linked by rail lines roads, pipelines and even airports.

5.2 RECOMMENDATION

The research identified the establishment of a multimodal transport arrangement for the carriage of liquid cargo from Bulk Oil Storage and Transportation Company using a combination of pipeline transmission of the oil into barges and transported via the lake, up to the north and then local distribution is done by trucks, in the case of BOST. While in the case of GHACEM cement is loaded from Tema and carried by trucks to the port in Akosombo to be transported via the lake to the north and onward distribution is done using trucks. The above elaborate activities establish that in addition to the five organizations identified earlier, truckers, shippers and passengers must be included in the sampling of the research data.

In order to ensure that the transport policies enumerated to facilitate the provision of the transport infrastructures that will support the shift from a unimodal transport operation to a multimodal transport operation in Ghana that will support effective and efficient transportation of goods and
people, that will enhance growth and development in the economy, the following must be put in place among other things;

- Harness the various transport policies such as "the urban transport policy draft", "bus rapid transport", "Ghana shared development growth policy document" into a comprehensive national transport policy that can support multimodal transport operation in Ghana.

- More public investment should be dedicated to the other modes of transport sub sector to create a uniform transport infrastructure development.

- Laws must be enacted to give credence and legal support to the private public partnership initiative to allow for adequate funds to be directed from private investors to the transport sector.

- Upgrade the existing transport infrastructural facilities.

- Expand the road network to accommodate vehicular transport and pedestrians.

- Construct a well extended rail road connecting the market centres and the hinterland and from the ports linking the industrial sectors.

- The Volta Lake must be charted and mapped out, and the stumps must be removed and the shoals must be dredged to allow smooth navigation.

- The pipelines must be refurbished to allow the transportation of petroleum products.

- Re-equip the Volta Lake Transport Company Limited to enable the smooth ferry operations and the transportation of bulk cargo.

- Implement the eastern corridor multi-modal transport project.

- The road transport subsector sector must be constructed to international standards with foot bridges, pedestrian work ways, pavement on gutters and drains etc.

- Measures should be put in place to recoup the investment from the infrastructure, so that those resources can be re-invested into the transport sector again.
To illustrate the above analysis further, the distance from Tema port by road to Tamale using two different routes say routes A and routes B.

Routes A is from Tema through Suhum – Nkawkaw – Kumasi – Techiman – Kintampo – Tamale is about 800 km long and takes about 13 hours to complete.

Route B, is from Tema through kpong – Juapong – Dambai- Kpandai – Makango – Yendi – Tamale. This route is about 600 km long and takes about 8 hours to complete.

Meanwhile, currently, route A is in a good shape but route B is in a bad shape, but route B is 200 km shorter than route A and 5 hours faster to complete than route A.

If a rail road is linked to Akosombo port from Tema port and from Buipe port to Paga with the Volta Lake as a major transport route supporting the Eastern corridor transport route which is mainly road and incidental to the rail and water transport to connect the northern part and the neighboring countries. Whiles a rail line links the Ashanti region from Tema port though Boankra port to Kumasi central, providing support to the western corridor also mainly by road. These four in one main routes will drive our industrial sector and serve as the engine for growth in all the ten regions and open the country up for trade with the neighbors.

To ensure that Ghana is on the path of fulfilling the requirements of becoming fully fletched developing country with the potentials to grow our industries and expand the businesses across the country to enhance economic development and prosperity for all, there should be available transport systems linking the south – east to the south – western part of Ghana. Link the northern part of Ghana to the south, and link the hinterlands to the factories to boost production of goods. Also, the commercial centers must be linked to the hinterlands and the urban cities.

This will mean that, the rail lines from Accra central to Nsawam must be revamped. The rail line from Accra central to Tema port must be operational and well functional, to be able to carry container cargoes from the port to the market centers. The rail line from Nsawam to Koforidua must also be restored, to cart the farm produce from the hinterlands to the industrial enclaves. The
rail line also from Nsawam to Kumasi must be revamped to allow for the transportation of the traditional goods and other produce from the hinterlands to the industries and the seaports.

In order to link the South to the Northern part of Ghana, so that trade can be enhanced, similarly, rail line connection must link the three regions in the north.

Other new rail connections earmarked in the study are the development of the rail line from Tema port to Akosombo port, to receive transit cargo and inbound consignment to the land linked countries such as Burkina Faso and Mali. Another rail connection from the Paga border linking Buipe or Yapei port is also crucial to serve as a delivery and receiving ports respectively. All these rail lines must be effective link by road transport and pipeline system to enable the delivery of goods and liquid cargo expeditiously to meet the demand of customers and the industries.

If the above recommendations and conclusions are considered and implemented, Ghana can comfortably be pronounce as a country ready to fully implement the most talked about multimodal transport operation that can support the delivery of goods and the movement of passengers just in time.

In order to meet the growing infrastructural needs of the multimodal transport sector, the above recommended modern ways of financing and funding transport projects as elaborated above must be explored:

However, in many countries, private sector financing has proved important in helping deliver the equity and debt financing needed to make infrastructure projects operational. Private sector involvement can also help manage the transition to user-pay/self-financing investments.
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APPENDIX A: QUESTIONNAIRE FOR TRANSPORT OPERATORS

I am a student of the Regional Maritime University pursuing an M.A Degree in Port and Shipping Administration. I am conducting a study on “A Shift from a Unimodal to a Multimodal Operations in Ghana”. The study is done for purely academic purpose, and any information obtained from you will be highly useful and treated with utmost confidentiality.

Thank you very much for your cooperation.

Please check [ ] in the box and briefly explain where appropriate

Respondent Socio – Demographic Information

1. Sex: (a) male [ ] (b) female [ ]
2. Age (years): (a) below 30 (b) 30 to 49 (c) 50 to 60
3. Educational background (a) secondary [ ] (b) tertiary[ ] (c) degree and above[ ] (d) other[ ]
4. Position: (a) Supervisor [ ] (b) Manager [ ] (c) Director [ ] (d) Logistician [ ]
5. Length of service in years: (a) 0 - 4 [ ] (b) 5 - 9 [ ] (c) 10 - 14 [ ] (d) 15 - 20 [ ]

Operational Information, Practice and Features

6. Do we have national transport policies in the transport sector in Ghana?

7. Are the policies and infrastructural facilities that which give support to the transportation sector? (a) Yes [ ] (b) No [ ]
8. What are the main infrastructural problems facing your organisation?

9. Is your medium and mode of transport adequate or need restructuring and investment?
   (Yes) [ ] (No) [ ]

10. Who are the main clients you do business with when it comes to water transport?

11. How collaborative is your organisation with your sector ministry or agency? (I.e. transport ministry, Ghana Maritime Authority etc.)

12. How do the other transport modes affect your operations?
13. Do you need a specialised equipment or ships, vehicles, trailers, trains etc? Provided by government to improve your operations? (Yes) [ ] (No) [ ].

14. How is the transport policies in Ghana affecting or promoting your operations?

15. Given the opportunity what transport policies would you want reviewed, changed or included?

16. Can we have an intermodal or multimodal transport fixture in Ghana?

17. (Yes) [ ] (No) [ ].

18. As a recommendation, what do you think should be done to improve transport operation and multimodalism Ghana?
APPENDIX B: QUESTIONNAIRE FOR SHIPPERS
(USERS OF TRANSPORTS SERVICES)

I am a student of the Regional Maritime University pursuing an M.A Degree in Port and Shipping Administration. I am conducting a study on “A Shift from a Unimodal to a Multimodal Transport Policy Operations in Ghana”. The study is done for purely academic purpose, and any information obtained from you will be highly useful and treated with utmost confidentiality.

Thank you very much for your cooperation.

Please check [ ] in the box and briefly explain where appropriate

Respondent Socio – Demographic Information

1. Sex: (a) male [ ] (b) [ ]
2. Age (years): (a) below 30 (b) 30 to 49 (c) 50 to 60 (d) 60 +
3. Educational background [ ] (a) secondary [ ] (b) tertiary[ ] (c) degree and above[ ] (d) other[ ]
4. Position: (a) Supervisor [ ] (b) Manager [ ] (c) Director [ ] (d) Logistician [ ]
5. Length of service in years: (a) 0 – 4 [ ] (b) 5 -9 [ ] (c)10 – 14 [ ] (d) 15 -20 [ ]

Operational Information, Practice and Features

1. How do you transport your product? Is it by:
   A. Road? [ ]
   B. Rail? [ ]
   C. Water? [ ]
2. Do you transport in bulk? (a) Yes [ ] (b) No [ ]
3. Would you have liked to transport in bulk and make use of economic of transport?
4. How is the transport infrastructure affecting your operation?

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5. Would you like to transport by way of multimodal or intermodal transport?

(a) Yes [ ] (b) No [ ]

6. How are the transport policies affecting your operations?

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7. Do you know of any notable transport policy in the transport sector?

(a) Yes [ ] (b) No [ ]

If yes state them:
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........................................................................................................................................

9. Is the load (tonnage) restrictions affect transportation of your goods?

(a) Yes [ ] (b) No [ ]

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10. If yes would you like that policy changed or reviewed? (a) Yes [ ] (b) No [ ]

11. Would you welcome the idea of combining road/rail/inland waterway and sea ports fixture to transport your goods? (a) Yes [ ] (b) No [ ]

12. As a recommendation, what do you think should be done to make multimodal Transport operations sustainable?

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APPENDIX C: INTERVIEW GUIDE FOR TRANSPORTORS, SHIPPERS, OPERATORS AND AGENCIES

I am a student of the Regional Maritime University pursuing a Masters Degree in Port and Shipping Administration. I am conducting a study on “A Shift From a Unimodal to a Multimodal Transport Operation In Ghana”. The study is done for purely academic purpose, and any information obtained from you will be highly useful and treated with utmost confidentiality.

Thank you very much for your cooperation.

1. How long have you been in the transport business?
2. What is your current position in your organisation?
3. Please state briefly the role of your organisation in the maritime transport sector.
4. What are the various outlets or inland ports under your outfit?
5. Does the transport sector have any visible or workable national transport policy?
6. Can you state briefly the current transport policy that is driving your organisation?
7. In what way do those policies ensure the use of the inland water way as an alternate or major transport mode to expedite smooth movement of goods?
8. Is your organisation equipped enough to carry out these transport functions?
9. Is there an existing legal regime, act or legal tool that supports the execution of your operations on this inland water way?
10. Apart from the inland water way, is there any mode that serves the same purpose?
11. Does your organisation need transport policies to operate efficiently?