Multimodal transport in developing countries

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MULTIMODAL TRANSPORT IN DEVELOPING COUNTRIES

By

SHRIKANT.V.KHER
India

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE in

SHIPPING MANAGEMENT (Commercial)
1995

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature)

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ABSTRACT

This dissertation is a study of the developments in Multimodal transportation in developing countries. It analyses the role played by various internal and extraneous links in the chain of multimodal transport.

A brief look at the historic evolution of multimodal transport is taken to understand the process of development. The need for multimodal transport in the developing countries is examined and possible gains that can accrue from it are discussed.

The status and adaptation of the infrastructure of ports, terminals, ICDs & CFSs, railways, roads and inland waterways to the multimodal system are scrutinised. Emphasis is laid on developments taking place in strengthening these infrastructures. Major problems faced in putting together the multimodal jigsaw in each of these are investigated.

Policy measures taken by the governments and legal supportive regime tailored to facilitate multimodal transportation are critically appraised. The role of customs and its procedures in facilitating quick movement of goods is investigated. The process of simplification of transport documentation with the use of EDI is studied.

Additionally, the part played by operators, i.e. shipowners, shipper's councils, trade bodies, multimodal transport operators and freight forwarders, in speeding-up the development of multimodal transport is viewed.

The reasons for Mega multimodal transport operator's interest in fostering multimodal transport are examined. An overview of contributions in term of actual investments made in various projects is made.
The last chapter draws conclusions on the direction of progress in multimodal transport in developing countries and highlights the principle problem areas and ways in which they could be overcome. Recommendations are also made to facilitate the process of multimodal transportation.
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<tr>
<td>APL</td>
<td>American President Lines</td>
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<tr>
<td>BOT</td>
<td>Built-operate-transfer</td>
<td></td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
<td></td>
</tr>
<tr>
<td>CFS</td>
<td>Container Freight Station</td>
<td></td>
</tr>
<tr>
<td>CONCOR</td>
<td>Container Corporation</td>
<td></td>
</tr>
<tr>
<td>COSCO</td>
<td>Chinese Ocean Shipping Companies</td>
<td></td>
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<td>CRCC</td>
<td>China Railway Container Centre</td>
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<tr>
<td>FNM</td>
<td>Ferrocarriles Nacionales de Mexico</td>
<td></td>
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<tr>
<td>GATT</td>
<td>General Agreement on Trade and Tariff</td>
<td></td>
</tr>
<tr>
<td>GPHA</td>
<td>Ghana Port and Harbour Authorities</td>
<td></td>
</tr>
<tr>
<td>HMM</td>
<td>Hyundai Merchant Marine</td>
<td></td>
</tr>
<tr>
<td>ICD</td>
<td>Inland Clearance Depot</td>
<td></td>
</tr>
<tr>
<td>ICTS</td>
<td>International Container Terminal Services</td>
<td></td>
</tr>
<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
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</tr>
<tr>
<td>JIT</td>
<td>Just-in-time</td>
<td></td>
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<tr>
<td>JNPT</td>
<td>Jawaharlal Nehru Port Trust</td>
<td></td>
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<tr>
<td>KCRC</td>
<td>Kowloon Canton Rail Corporation</td>
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<td>KNR</td>
<td>Korean National Railway</td>
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</tr>
<tr>
<td>LCL</td>
<td>Less than Container Load</td>
<td></td>
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<tr>
<td>MICT</td>
<td>Manila International Container Terminal</td>
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<tr>
<td>MMTO</td>
<td>Mega Multimodal Transport Operator</td>
<td></td>
</tr>
<tr>
<td>MOL</td>
<td>Mitsui OSK lines</td>
<td></td>
</tr>
<tr>
<td>MOR</td>
<td>Ministry Of Railways</td>
<td></td>
</tr>
<tr>
<td>MTD</td>
<td>Multimodal Transport Document</td>
<td></td>
</tr>
<tr>
<td>MTO</td>
<td>Multimodal Transport Operator</td>
<td></td>
</tr>
<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
<td></td>
</tr>
<tr>
<td>NOL</td>
<td>Neptune Orient Lines</td>
<td></td>
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<tr>
<td>NVO-MMTO</td>
<td>Non-Vessel Owning Mega Multimodal Operators</td>
<td></td>
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<tr>
<td>NVO-MTO</td>
<td>Non-Vessel Owning Multimodal Operators</td>
<td></td>
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<tr>
<td>NYK</td>
<td>Nippon Yusen Kaisha</td>
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<tr>
<td>OOCL</td>
<td>Orient Overseas Container Lines</td>
<td></td>
</tr>
<tr>
<td>P&amp;O</td>
<td>Peninsular and Oriental Lines</td>
<td></td>
</tr>
<tr>
<td>PNR</td>
<td>Phillipines National Railways</td>
<td></td>
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<tr>
<td>PRC</td>
<td>Peoples Republic of China</td>
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<tr>
<td>SCT</td>
<td>Mexico’s Communication and Transport Secretariat</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>--------------</td>
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<tr>
<td>SRT</td>
<td>State Railway of Thailand</td>
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<tr>
<td>TEU</td>
<td>Twenty foot Equivalent Units</td>
<td></td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<tr>
<td>UOT</td>
<td>Upgrade-Operate-Transfer</td>
<td></td>
</tr>
<tr>
<td>UPT</td>
<td>Union Pacific Technologies</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>VO-MMTO</td>
<td>Vessel Owning Mega Multimodal Operators</td>
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<td>Vessel Owning Multimodal Operators</td>
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Chapter 1.1
EVOLUTION OF MULTIMODAL TRANSPORT

Nations involved in the Second World War went in for rapid re-structuring and industrialisation in order to revive their War-affected economies. This wave of industrialisation lead to mass production of manufactured goods. The major aspect of this era was the thrust towards globalisation of trade. These manufactured goods required prompt and proper handling along with quick movement. There was an evident need for fast and efficient transportation.

The demands of the trade for speedy movement lead to the transportation industry concentrating on increasing the efficiency of individual modes such as ships, railways and aircrafts. As the trade grew, cargoes started moving in larger quantities. The flow of cargo at the nodal points i.e. Seaports, Airports and Railheads was slow due to the nature of packing of cargo and inadequate handling technology. The transport system could not cope with this flow which resulted in delays to cargo movement. “Unimodal thinking” prevailed. Each mode of transport was identified separately as shipping, railways or trucking industry.

Malcolm Maclean is considered as the initiator of Multimodal Transportation. Although use of more than one mode of transport existed in the overall operations of trade, the genesis of Multimodal Transport was brought about in the year 1957 with the introduction of containers. A converted tanker, nicknamed as the “Garage Ship”, with a tailor-made deck carried 58 trailer vans loaded with containers from
Newark, New Jersey to Houston, Texas. This voyage can be regarded as a first multimodal movement of cargo between the land-sea interface. Mr. Muller Gurhadtt called the voyage an experiment in integrated truck-ship freight distribution in his book entitled Intermodal Freight Transportation (published by ENO Foundation for Transportation year 1989).

The container concept evolved from large volumes of general cargo which lead to the "one shipper to one consignee" type of a transport. This lead to the making of one or more identical units i.e. containers for a large shipments of cargo to a single destination.

The decade of the sixties was the dawn of the container Revolution. Unitisation of general cargo in freight containers was here to stay. While the Container revolutionised the carriage and movement of cargo, it also concieved the concept of an integrated approach to transportation. This integrated approach to transport culminated in the practice of multimodal transportation. Thus containerisation and multimodal transport have become inter-twined.

An efficient Multimodal Transport System incorporates more than one mode of transport into a single documented system of transportation. The goods are carried from the factory/warehouse of a manufacturer/trader in one country to the warehouse/factory of a trader/manufacturer in another country. This movement is carried out under one document and the responsibility for the cargo is borne by the Shipping Company or the Multimodal Transport Operator (MTO) who issues the combined multimodal transport document.

In Multimodal transportation one operator controls the movement of many modes. The operator works towards a total co-ordination in movement of cargo. This minimises delays in transit. The containers are generally stuffed at the point of origin.
of the cargo, that is, either at the shippers premises or at a container freight station (CFS) or an Inland Clearance depot (ICD). Once properly stuffed the container moves by rail or truck without the danger of damage or pilferage. Unitised movement of cargo by trucks and rail saves time at nodal interfaces with one or two moves. The sealed containers ensure safety to the cargo within, as damage and pilferage are reduced. Due to swift movement of cargo, offered by the multimodal system, there is a considerable saving in transportation costs.

With the success of the first container enterprise, October 1957 saw the first fully containerised vessels carrying 226, 35ft containers simultaneously. These ships were self-sufficient units equipped with two rolling gantry cranes. After Maclean’s successful experiment with modification of a tanker and acquisition of necessary certification, business was obtained on the basis of a single bill of lading. This bill of lading encompassed the movement of all carriers from point of origin to destination.

These ships were not as successful as anticipated because the gantry cranes on board restricted the stowage space. The containerised ships with gantries were uneconomical. Hence these cranes were shifted to the shore. The international overseas trade saw problems in this as many ports did not have such crane facilities. Vessels with their own lifting equipment were preferred in trades where shore facilities were inadequate. Such vessels carried both containers and breakbulk cargoes. This indecisive trend in vessel design continued for several years.

It was only in early 1966 that a proper international movement of containers started on the North Atlantic route from Western Europe to Maryland / New Jersey. The amount of investments required in terminals and handling facilities were very heavy. Also parallel operations of both breakbulk and container ships did not encourage the cellular ships much. There was stagnation in the container trade. To add to this, there arose problems relating to the issue of liability for loss and damage to cargo.
due to the multiplicity of modes of transport. This phase continued and protracted efforts were made to address these issues.

Another major development for the multimodal transport industry was the emergence of the Landbridge. In the year 1971, the Seatrain Lines flaged off the Landbridge when they carried bales of raw silk from Japan by sea to Seattle and from Seattle to New York. Two independent contracts were made with the railroad carriers and the sea carriers. With de-regulation of the railways in USA, in 1984, liner train services were established between Seattle & New York. It was here that the biggest saving in transit time of seven days was realised. Individually designed railroad flat-cars with a capacity to carry two-high stacked containers were very effective.

Maersk Lines in the year 1985 operated a similar landbridge service. With this a number of lines started such operations. However the variation in the custom designed containers created problems of interchangeability of units between shipping lines and trade. This was overcome by the ISO standardisation of containers to a universal size in the year 1963 when American sizes were accepted as series-1 containers. The standard general purpose container had a size of 20ft x 8 ft x 8.5 ft.

The concept of comprehensive logistic management resulted in prompt through-transport which was very much what the trade needed. The sea transport scenario soon transformed from carrier-dictated to market-driven.

The United Nations Multimodal Transport Convention was adopted by consensus in order to unify the multiple liability regimes in use for multimodal transportation. In simple words it is meant to create a semblance of order out of the chaos of the liability systems. It was opened for signature from 1st September 1980 to 31st Aug 1981. It will come into force 12 months after a minimum of 30 states become contracting parties. At present only 7 states have become Contracting Parties.
The main application of Multimodal Transport is in Containerised trade. Although growth in containerisation does not directly indicate a growth in Multimodal Transport, a consistent increase at an annual average of 10.3% since 1991, in world’s fully cellular containerships offers great potential for growth in Multimodal Transport.

Multimodal Transport has reached a stage that it is now fully embodied into the production system of Corporations. As a tool at the hands of Companies, it now faces the challenges posed by the corporate world. Mr Rune Svensson, President Volvo Transport Corporation, Sweden in a paper “This must be the intermodal decade” presented for Intermodal ’92 conference (page 21) says:

“During the 70’s and 80’s, we have mainly been using logistics & integrated system as tools for rationalisation but today we are more using these concepts as marketing activity”.

This statement indicates the level of integration which can be achieved by Multimodal transport, not exclusively logistics but also extending to the marketing activity of a company.

Dr Volker Bertram of the Hamburg Institute of Shipbuilding sums up the future of Multimodal Transport by stating that,

“The challenges for the next decade are handling technology and rapid inland transport.”

(‘The container jumbos’, International Transport Journal, 9/95, page 45)
Chapter 1.2
POTENTIAL GAINS FROM
THE INTRODUCTION OF MULTIMODAL TRANSPORT
TO DEVELOPING COUNTRIES

The gains from Introduction of Multimodal Transport to Developing countries can be best understood by analysing gains accruing to the major players in this operations. Major beneficiaries who would gain from the use of Multimodal Transport are:

1. The Country
2. Trade.
3. The Corporations
4. The Transport operators.

1. The country.
Globalisation of trade has become an integral part of international trade. Survival in this highly competitive global economic environment has become difficult for many of the developing countries. Incorporating the multimodal system of transport is one of the means through which competitiveness both in quality and price could be achieved. This competitive position would improve the exports of a country due to timely delivery of cargoes. The increase in exports would result in improved foreign exchange earnings.
Introduction of a multimodal network would on a long term basis set up dependence supply lines e.g. ports in the northern China region were dependent on the ports of Yokohama, Busan & Kobe for transport to overseas destination. The cargo was shipped in breakbulk to these ports for stuffing in containers. This resulted in a large amount of charges towards stuffing of containers and freight. The local ports also lost on revenues as they were not able to attract larger ships, port charges for which would have been lucrative. Multimodal Transport would bring about structural changes in the transport of the country’s international trade.

Increased trade resulting from smooth movement of cargo would lead to an increase in the development of the banking and insurance industry of the country.

2. The Trade.

The largest advantage the trade has in a Multimodal Transportation system is that the total freight costs from place of origin to the final destination are known. The exporters and shippers are aware of the all inclusive cost of produce. This makes it very easy for them to quote for importers abroad and control the costs to remain competitive in the market.

An efficient Multimodal Transport network increases trade efficiency with smooth flow of cargoes by reducing delays and losses at nodal interfaces. This smooth movement of cargo would earn a good reputation for the trade in that country.

The trade can concentrate better on core trade related activities when a single operator arrangement takes care of all the legs in the transportation chain. Without a Multimodal Transport channel a lot of valuable time is spent on logistic followup at major connections.
The safe carriage of the cargo results in improved margins for the trade. These resources could then be employed more productively.

3. The Corporations.
Mr. Rune Svensson, the President of Volvo Transportation Corporation has listed the advantages of Multimodal Transport in a Conference on Multimodal transport. He says:

"More and more CEO’s and company managements are realizing what multimodal systems and logistics can do to improve a company’s profits, increase the market share, improve cash flow, open new territories and introduce new products”.

(Intermodal '92, 'This must be the intermodal decade', Netherlands Congress Centre, The Hague, 27-29 oct '92, page 21)

One of the important parameter of customer satisfaction in the international trade is the timely delivery of products in good condition. The greatest advantage of a multimodal network is the scheduled delivery of cargo with practically no damage or shortfall in cargo. Corporations using these networks can achieve greater level of customer satisfaction while simultaneously maintaining quality.

With Multimodal Transport, opportunity is provided to the Companies to use logistics in such a way as to reduce costs and improve cash flow due to reduction in tied-up capital. Under a normal transport system the company would import raw material, machinery and pay for it as soon as it was offloaded at the port. The goods would be idle till they reach the plant located inland. With the door-to-door delivery of material, payments are made only at the final point of destination. Large funds are not tied-up during the transit passage of these highly capital intensive goods. These funds could then be employed into other more productive activities.
Many Corporations using Multimodal Transport could offer flexible production systems which are based on the concept of Just-in-Time (JIT) delivery of raw material, quick and reliable transportation of finished products. The Multimodal Transport option can give this new direction to the industry in the developing countries.

With a wider reach offered through Multimodal Transportation there would be good scope for catering to newer markets. New products would also be developed for these new markets.

4. The transport operators.
The transporters in the developing countries are always faced with the problem of loss or damage to cargoes due to the bad handling at many points. The multimodal system of transport offers a good tool of risk management whereby the transport operator can reduce the risk of damage and pilferage of cargo by using this safe containerised mode of transport. The profitability will be higher due to reduction in liability.

The quality of transportation service would also improve with quick transfers and safer haulage of goods. The increased speed of transport will also provide a larger spread of service to a number of inland destinations.

Turnaround time for vessel operators would improve as readily stuffed containers from inland ports would be quickly loaded. Port stay will be reduced considerably as compared to the conventional ships where cargo handling and stowage takes up a lot of vessels time in port. This quicker turnaround would increase the availability of tonnage capacities for global trade for additional freight earnings.
One of the major operating costs in container shipping is the container leasing costs. Most transporters in developing countries do not own their own containers. The speedy movement of containers under a good multimodal system assists in reducing container leasing costs.
Chapter 1.3
NEED FOR DEVELOPMENT OF MULTIMODAL TRANSPORT
IN DEVELOPING COUNTRIES

Why the developing countries should get into huge investments for strengthening the multimodal activity is still a question put up by a number of nations. Many of these countries seem to conclude that the trade is self-driven and will go on anyway multimodal or no multimodal. The trade volumes are severely affected by an absence of an efficient inland system. These countries soon realise the excessive direct and indirect price that they have to pay for the lack of such a system.

There are many critical factors which make Multimodal Transport a necessity to these countries. The changes in the global trade environment and the container shipping industry have also brought out certain additional factors. These factors are discussed below:-

1. Shift in nature of exports.
The Developing countries over the past several years have shown a shift in exports from primary goods to value added manufactured goods. It is illustrated from the statistics published in the UNCTAD Statistical pocket book 1992, Table 1.5, page 14.
Table I

Structure of World Exports by Main categories

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</thead>
<tbody>
<tr>
<td>DME's</td>
<td>25.4 %</td>
<td>18.6 %</td>
<td>73 %</td>
<td>78.8 %</td>
</tr>
<tr>
<td>Devl. countries</td>
<td>84.2 %</td>
<td>39.9 %</td>
<td>15.5 %</td>
<td>59 %</td>
</tr>
<tr>
<td>World total</td>
<td>40.5 %</td>
<td>24.2 %</td>
<td>57.8 %</td>
<td>73.5 %</td>
</tr>
</tbody>
</table>

As can be seen from the table the exports of primary products have reduced by 44.3% and a sizeable increase in the manufactured goods by 43.5% from 15.5% to 59% between the year 1975 to 1992. The increase in export of manufactured goods results in higher value of goods due to the value added to the commodity. With these high valued goods at stake there is a pressing need for quick and reliable means of transport to realise large amount of capital is tied-up.

2. To Maintain high growth rates.

The need for Multimodal Transport to developing countries exists as their average annual growth in manufactured products is high as compared to the Developed economies. From the Table 1.6 published in the UNCTAD Statistical pocket book, page 16, a comparative increase can be seen.

Table II

Growth of markets (Average annual growth rate of Manufactured goods in %)

<table>
<thead>
<tr>
<th>Group of countries</th>
<th>Average growth rate between 1980-1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>World total</td>
<td>7.9 %</td>
</tr>
<tr>
<td>Developed Market Economy Countries</td>
<td>7.4 %</td>
</tr>
<tr>
<td>Developing Countries</td>
<td>13.7 %</td>
</tr>
</tbody>
</table>
Presently, most of these manufactured goods are exported and in order to keep up the growth rate, smooth flow of cargo is very essential. National exports have suffered from low volumes due to various factors of which lack adequate multimodal systems is a major one. Multimodal transport encompasses all the modes in the chain and facilitates this smooth flow. Hence there is a need to consistently establish, improvise and upgrade the multimodal systems in the developing countries.

Container port traffic of developing countries and territories has increased from 31.095 Million in 1991 to 36.133 Million in 1992 i.e. by 16.2%. With the availability of good multimodal transport this percentage could increase further. Most of the activities at the ports are slowed down with the port engaging in stuffing and destuffing containers when actual container moves of loading and discharging of containers should be a parameter of productivity.

3. Importance to Quality in trade.

For many developing countries, the opening up of global trade through the ratification of the General Agreement on Trade and Tariff (GATT) has broken down trade from earlier bi-lateral to a multilateral pattern. In this competitive environment there is little margin for error either in schedule of delivery or in quality. It calls for perfect performance in pipeline management and deliveries.

Currently large amounts of cargo is moved as breakbulk cargo, from inland points to and subsequently consolidated into containers, at the port of shipment. There is increased risk of loss or damage to cargo. World-wide standards are being established for quality for all the products traded. Any slackening in quality due to this will result in rejections, which these countries can ill-afford with their growing economies.
4. Distribution of world container fleet.

Containerisation is there to stay and most international trade in general cargo is increasingly being carried by fully-cellular containers. The percentage of fully-cellular container fleet of the developing countries is 15.7% in the world fleet of containerships.

Table III

<table>
<thead>
<tr>
<th>Regions</th>
<th>TEU capacity</th>
<th>% share of TEU</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Total</td>
<td>2,092,204</td>
<td>100</td>
</tr>
<tr>
<td>Developing countries</td>
<td>329,200</td>
<td>15.73</td>
</tr>
<tr>
<td>Developed Economies</td>
<td>714,088</td>
<td>34.13</td>
</tr>
<tr>
<td>Open Registry</td>
<td>599,753</td>
<td>28.66</td>
</tr>
</tbody>
</table>

(Source: Review of Maritime Transport 1993, UNCTAD (Table 5) page 16)

Of the total fleet in the developing countries about 60% fleet is from Asia. Most of the other developing countries either have limited containerships or none at all. In this event they have to depend on the outside ships carrying their cargo. The freight charges for cargo carried by other flag fleet are not directly within their control. The factors under their control are the inland operations and transportation costs. Also another aspect is that the sea transport actually constitutes about 30% of the total transport cost. It is hence very important to monitor the transport cost on the other legs. If a sound and efficient system is developed the costs of inland transport could be checked.

Over the last decade a trend towards larger and faster ships has prevailed and these containerships are now looking for quick turnaround which depends on speed of movement of the containers at ports and other points and large numbers of container
volumes. In this event, swift handling of containers backed-up by generation of economic volume of containers from the inland depots determine the freight rates. The freight rates in turn determine the competitiveness of a commodity exported by the country. Hence in order to stay competitively priced, these countries must meet the requirement of speed and volumes by developing multimodal transportation.
Chapter 2.1.1
PORTS, CONTAINER TERMINALS AND INLAND WATERWAYS

With multimodal transportation, the role of ports has changed from gateways to national trade, to cogs in the wheel of global integrated transportation. Ports have become nodal points from which containers radiate in all directions i.e. to the ocean and hinterland routes. The focus of port efficiency and productivity has now enlarged from sea-side to the land-side operations. In addition to the need for increased productivity, today, it is critical for the port's to carryout efficient connectivity of interchange of containers with carriers viz. ships, air, rail and road transport.

In order to deliver a specific container to a carrier at a scheduled time to a pre-designated point, the port should have modern container handling equipment and online information system with a responsive operational system.

The ports in the developing countries were slow to adopt to containerised cargo due to the high costs of container handling equipment and large investments for setting up container facilities. Most of the ports were geared to handle general cargo. Containerisation and multimodal transport has since become the mainstay of trade, in general cargo. The ports with high growth in container throughputs are in a state of transition, acquiring container handling equipment, building container terminals/yards and providing multimodal links through rail and road. Their efforts are directed towards bringing up the capacities to keep up with the increased traffic. In other ports the process of adapting to containerisation is slower.
The study of ports handling multimodal traffic is thus a study of the hurdles faced in coping with multimodal transport. World Bank's report on the use of infrastructure in developing countries refers to 28 loans for port projects between 1980 to 1992. It found problems with a lack of clear goals in 21.4% of cases, lack of management autonomy and accountability in 33.7% cases and financial and labour problems in 42.9% cases. Thus in a nutshell summarises the general port administration problems in developing countries.


Port's problems in developing countries can be classified into two types, the first type relate to administration of ports in general and the second pertain specifically to the multimodal activity in the ports. Both these issues affect multimodal movement of containers.

A large number of the general port administration problems are inter-related. The problems and the impact they have on multimodal movement of containers are discussed below.

1. Port congestion.

Port congestion is the outcome of other underlying issues such as fewer container berths, inadequate stacking spaces, outdated container handling equipment, slow inland movement of containers and inefficient port procedures. The shipping companies, the importers and the shippers have to bear the brunt of the high costs resulting from the congestion. The major fallout is that it renders national trade uncompetitive and unreliable. The problem of congestion becomes further aggravated with an increasing trend in traffic. This larger impact is realised by intermodal operators in India, Mr. Kumar Krishnamorthy, President of Bombay & Nhava Sheva
Intermodal Agents Association, refers to the increased traffic and the threat of congestion in Bombay Port and suggests,

"This has to be tackled on a war footing. We need to send the message to the Finance Ministry that unless we can remove the bottlenecks, it will ruin everything".

('Port could burst at seams as traffic increases', Lloyds List, Jan 31 1994)

The solution hinted above, is aimed at generating funds at the national level to modernise equipment and augmenting container handling capacities. The Finance ministry should also rationalise tax collection and effectively reduce multiple taxation at multiple points.

2. Low productivity.

Integrated transport has put additional pressure on delivery schedules and the handling rate is now a critical productivity indicator for ports. K.J. Macdiarmad, P&O Containers Regional Manager S.Asia compares productivity and says:

"Jawaharlal Nehru Port Trusts (JNPTs) current performance of 9-10 containers per hour and 6-8 containers at other ports for feeder ships using own gear compares poorly with 30-33 per hour in Colombo and 50 - 70/hr in US, Europe & F.E".


Constant monitoring and efforts in improving this indicator will aid in bringing up the port productivity.

3. Owned and operated by government.
Most container ports in developing countries are owned and operated by the port authorities controlled by the government. In principle this should not pose any real constraint. However these ports were not geared to perform on a commercial basis and lack a service oriented approach.

3 a. Used as a source of employment
Many countries, in the past, used the ports as employment sponges for unemployed youth. The two ports of Ghana, namely Tema and Takoradi, had the numbers going up to 5000 employees. The present situation however requires higher level of skilled workers in smaller numbers because of the shift towards highly mechanised and capital intensive operations assisted by extensive computerisation. Although reduction of the work force is on, the Ghana Port and Harbour Authority (GPHA) presently employs 2800 people in both the ports. Managing the cost of both, the equipment and the large number employees pushes up tariffs for services. As a result the port of Tema is the 2nd most expensive port in West Africa after Lagos, Nigeria.

3 b. Bureaucratic controls
Another fallout of the government control is the presence of the beurocracy at the helm of port management. The beurocracy usually constitutes generalists who are shifted from their posts every 3 or 4 years. The initial period is lost in getting acquainted with the port activities and by the time the expertise is gained, they are transferred out. As this is done on a regular basis no real port expertise is retained. The decision making on a day-to-day operations is procedure-oriented rather than market-oriented. In Brazil, Port beurocracy is the biggest problem faced by the carriers. An example of procedural approach is that ports bar most private terminal operators from handling anything but their owner-operator cargo. With 35 Public ports in Brazil, the problem of beurocracy is exacerbated.

4. Economic constraints and incompetitive volumes handled by the ports
As most ports operate under a Government Ministry, they do not have financial autonomy. At most an operational autonomy may be available. The allocation of funds for modernising and operating the ports is not always a priority for the government. Also, incompetent volumes of throughputs makes it difficult for many ports to generate their own resources for updating its equipment.

Mexico has five major container ports i.e. Altamira, Lazaro Cardenas, Manzanillo, Tampico and Veracruz. The major limitations in modernising & equipping its ports are economic constraints and that the volumes handled by some of its ports are incompetent. The enthusiasm to develop all ports irrespective of their economic volumes should be curtailed and hard commercial decisions must be taken.

5. Lack of competition among ports

Healthy competition among ports within a country/region promotes higher level of efficiency. Competition provides impetus to port development, Singapore and Hongkong are classic examples. Port competition is forcing Chile’s ports to modernise. Its port of Valparaiso has embarked on an important upgrade so that it can handle intermodal connections for European and Asian lines more efficiently as well as recoup lost cargo to other ports such as nearby San Antonio.

Some countries have a situation of rivalry between two ports as in case of Thailand’s Klong Toey Port and the new port of Laem Chabang. Although the deep-sea port of Laem Chabang lacks critical infrastructure there is continuous pressure to increase its usage due its capacity to handle 4th generation container ships. In addition the new port offers privately operated terminals which promise better efficiency. With ample room for expansion it is the futuristic port of Thailand. The government is also simultaneously promoting expansion of Klong Toey port through slum reclamation around it. This leaves the operators with a choice of ports and both ports are likely to be benefit through the competitive environment.
6. Port strikes

Certain ports face strike situations due to rapid containerisation. Port employees at the Karachi port have resorted to wild-cat strikes, worried that mechanisation would lead to loss of jobs. This has resulted in causing a substantial financial loss to shipping companies. Dockside unions in Brazil are reported to hold the cargo handling to ransom with strike situation & labour disputes becoming commonplace. Generating awareness of the benefits from containerisation and retraining of employees in the use of mechanised cargo handling could help improve the situation considerably.

In addition to the General Administration problems, many ports have problems specific to multimodal transport. These are :-

1. Limited container handling facilities

Many container ports have limited/ minimal state-of-art container handling equipments such as gantry cranes, forklifts, straddle carriers etc. Lack of well maintained and efficient handling equipment at a number of Russia’s far eastern ports of Vladivostok, Vostochny, Nakhoda and Vanino have led to major congestions.

Bombay port, in the face of lack of modern equipment, has adopted the method of improvisation. The big question is however, whether such an improvisation can cope with the continuously increasing volumes. Mr.K.Nalinakshan, Chairman of JNPT, Bombay admits,

"The port has shortage of equipment. This investment could be provided by private investment, a policy the port is adopting".

(Bascombe, A, ‘A dead elephant in the doorway’ Containerisation International, Feb’95, page 79)
Adequate incentives for private sector investments are needed to encourage participation in the container handling activity.

2 a. Cargo handling equipment in dis-repair
The Ghana Ports & Harbours Authorities (GPHA) ports of Tema & Takoradi face the problem of cargo handling equipment in disrepair.
"We are forced to own and use our own equipment and employ our own staff" says A.A. Banda, Chairman OT Africa line which operates a dedicated Ro-Ro service to West Africa. For a shipping line to invest in these capital intensive equipment means high container handling costs for the shippers/consignees.

2 b. Bad maintenance of equipment.
Lack of systematic maintenance procedure leads to a condition of frequent breakdown. The scheduled delivery of containers door-to-door is adversely affected. One of the reason for Jawaharlal Nehru Port Trust’s (JNPT) shortage of equipment is breakdown due to bad maintenance procedures. One port user comments more directly on the maintenance policy.

"There are no maintenance procedures. Machines work until they stop. Repair is JNPT's maintenance policy".


This condition is largely representative of the situation in a large majority of ports of the developing world.

3. Inadequate inland connections.
Rail and road links to ports are an important feature which puts the ports and terminals on the map of multimodal operation. Although block trains operate between Russia’s far eastern ports to the Finnish borders and into Belarus and Ukraine,
logistics problems result in wagons waiting for weeks/months in port yards before they are loaded.
The Ports in Mexico also have to overcome the problem of rail link, where the shuttle game between ports and railroad continues. Ports want the railroads to become more efficient and the railroad want to see provision for ondock rail-yards to improve the intermodal operations.
Road links to ports suffer from slow movements caused by bad road conditions, ports location in dense city traffic, shortage of trailer trucks etc. A conveyor belt type of inland movement inland is not achieved due to these constraints.

4. Space Constraint.
Multimodal activity in ports require buffer space to stack containers, for through movement to rail yards and trailers, free space for movement of handling equipment, provision of container yards etc. The space constraint is more pronounced in older ports which have switched from general cargo to container traffic. These ports were not built with large free spaces. The port of Bombay is plagued with the problem of space when it is ironically one of the largest land-owner with large land areas leased out on long term lease. This has resulted in segregated container activities; i.e. destuffing LCL containers takes place in one location while stuffing takes place in another, distances ranging from 10-20 Kms apart. The port productivity is severely affected.

The space constraint could be minimised if the container movements are perfectly synchronised with the help of computer tracking and movement. When a situation of zero idling time for a container in the port is reached such large spaces will not be required. However the ports in many developing countries are not geared for this yet.
5. Want of terminal expertise.
Lack of terminal expertise among ports leads to poor yard planning and terminal management. Overlay of containers with general cargo sheds, operations of both cargoes at the same ports are features which are widely seen. This results in higher operational costs and poor quality of service.

6. Inconsistent productivity
Port operators also complain of inconsistent productivity. The number of moves vary widely between 6 moves/hour to 18 moves/hour for a single ships operation. e.g. The initial 50% are moved quickly, next 30% little slower and last 20% will take an extremely long time. This makes a fixed-day service for a shipping line very difficult. When a plan is made for 8 moves/hour the port gives 14 moves/hour, the line is left with extra time where additional containers could have been loaded. On the contrary when the port gives lesser than planned moves, boxes have to be left behind. Once the shipping line fails with its plans and commitments then the multimodal delivery schedules are severely affected both inland and overseas.

Inspite of these constraints, there are efforts in a number of countries to improve their ports to a higher level of multimodal efficiency by investments in terminals, dedicated and efficient container berths and modern container handling equipment.

1. Mexico’s rail company, Ferrocarriles Nacionales de Mexico (FNM) is reportedly spending $10.3 million to expand the Pantacano Intermodal terminal which currently serves double stack container trains and other commodity traffic will be converted to an entirely intermodal facility.

2. Continuous investments towards enhancing port capabilities in-keeping with the growth in demand is demonstrated in the Malaysian ports. The focus is on investments in facilities at 3 key ports.
Port Kelang: 3 container berths at KPM container terminal
Penang: 1st phase of north butterworth terminal
Johor: Phase III container terminal

These planned investments are expected to make available 1.3 million TEUs container traffic capacity. With such focused investment, the country's container handling capacity is expected to double.

3. Ghana ports & Harbours Authority (GPHA) has modernised and upgraded Tema & Takoradi, its 2 major ports handled approx. 95,000 Teus and 11,000 TEUs in 1993 with an investment of over $100 M. The GPHA on a long term basis is toying with various options door-to-door, free port concept industrial office zones and the idea of moving into intermodal transport, offering door-to-door service also for other west African countries.

4. Kenya Port Authorities, Alec Mumba MD, referring to the objectives of the port of Mombasa says,

"Principle objective has been to take port services as close to the users as possible through establishment of intermodal facilities and aggressive marketing campaigns".

(Rissik, D, 'Portnet strives to balance demands', (1994), Lloyds List, 25 March'94)

KPA itself has undertaken to plan & implement a number of projects for advancement of intermodalism such as development of electronic tracking and setting of more ICDs.
5. The port of Karachi is also making efforts in investment in building of additional container berths at berth nos. 14 - 17 (350000TEUs) and 22 to 24 (250000TEUs) which is expected to be commissioned by end 1996.

6. Hectic activity in developing container berths is taking place in southern China at Shekhou, Chiwan, Yantian. Also development of feeder ports berth at Jiuzhou, other terminal developments are planned at Xingang, Dongdin near Xiamen and a new port to include container facilities at Dayao Bay near Dalian.

7. South East Asian ports are speeding up terminal developments at their ports in tune with their exuberant economic growth.

**Taiwan** :- Port of Kaoushiung terminal 4 is completed and terminal 5 is under construction.

**Thailand** :- terminal developed at Laem Chabang is already operational but due to lack of efficient inland connections has failed to attract anticipated business.

**Philippines** :- Manila International Container Terminal is gradually developing its 4th berth and is also modernising its container handling equipment.

**Indonesia** :- Port of Tanjung Priok serving Jakarta, 3rd container terminal is being constructed and planned for completion in 1999.

**South Korea** :- Port of Masan is planning to expand its container handling facilities on a smaller scale.

"Container terminal development throughout most of Asia is set to continue apace at least through to the end of the decade and almost certainly well beyond that".

Although the ports are one of the major wheels in the multimodal operation their importance should be that of one component. Hans Peters, Principal Maritime Specialist at the World Bank speaks of a change in emphasis to integrated approach.

"The world bank is now moving into integrated transport sector with ports as only one component."

('World Bank rounds on infrastructure inefficiency', Port Development International, July/August'94, page 7)

This realisation has come with interests in port developments being increasingly given to private sector and the emphasis of total logistics approach.

**Inland Waterways**

Development of Inland waterways for use in multimodal transportation depends primarily on the geographical position of lakes and rivers and its commercial use within the country. A country blessed with a large existing waterway system of rivers and canals could cash-on it for multimodal transport. Developing such a system for intermodal transport can be done at a much lower cost than building and laying of new roads/ railways. Such a waterway could be utilised to its fullest if the route covers large industrial and commercial centres.

There are few developing countries which have successfully used waterways for intermodal transport. Chinese rivers viz. Yellow, Pearl and Yangtze rivers used for transportation of general cargo to overcome the problem of inadequate road network in certain areas. However the Yangtze river has the problem of water depth which in some places is only 7 Meters and ships of 20,000 DWT and over have to wait for high tide. There is also a continuous need for dredging. Higher bridges are required to ensure sufficient air draft. Such activity entails huge initial investments & recurring maintenance expense.
An ambitious Regional waterway development project is drawn-up, jointly by the governments of Brazil, Bolivia, Paraguay and over 60 private businesses in S.E. Brazil. The project aims at improving the navigability of the Tiete-Parana river system and opening inland intermodal terminals. The development activity involves deepening and broadening the river system and is expected to take 12 years at an estimated cost of USD 1 million. The waterway will be a vital artery linking the Mercosul nations i.e. Brazil, Argentina, Uruguay and Paraguay. Two intermodal river terminals have already been built at Paderneiras and Sao Simao. The port of Santos is expected to benefit indirectly from the inland waterway traffic.

There are two major issues which would act as deterrents to the development of Inland waterways in today's shipping industry. The first deterrent is the growing environmental concerns arising out of developing inland waterways and peripheral industrialisation resulting from it. This makes it difficult to justify the commercial use and find funds for the development work. Another issue is the shift from General cargo ships to Container ships: the containerised cargo requires building terminals for stuffing/destuffing cargo and most containerships have larger drafts which most of the existing waterways cannot accommodate.
Inland links upgrade port-to-port shipping activity to the totally integrated logistic multimodal transportation system. The railways, roads and the inland ports are the core links in this system. The success of this activity therefore depends on the condition and capacity of these basic infrastructures to carry containers efficiently.

Developing countries face a double edged challenge of maintaining the existing road/rail facilities along with upgrading and expanding them to meet the increasing demands of trade. Road and rail serve both the freight and passenger needs of developing countries. Container movement is only one of the items under the overall freight movements which include freight movement of grains, minerals, coal etc. The developmental work for such projects involve large investment decisions, made at the national level. The final direction of such projects hence depends largely on the interest and pressures exerted by all the users. Importance to container movements by rail is reflected by the active involvement of these parties utilising the services.

The current situation varies greatly in each country depending on their economic situation, inherent assets of rail and road, the geographical location and demands from the trade.

Railways

Railways are the best suited mode of inland transportation for long haulage of containers. As compared to movement by road, the risk of pilferage and damage to cargo is much less. The speed in movement and schedules of delivery can be better
met. International and inter-state border waiting and delays are also reduced. Finally, larger number of containers carried at the same time by rail can feed the ships, economically.

Many developing countries, which were former colonies, have inherited large length of railway lines which are still functional. Although basic network is in place many of these lines need upgradation to carry containers. A number of countries have pursued this process actively. Despite these activities, multimodal movement of containerised cargo remains confined to a few countries. In an overview of latest container transportation activity, Containerisation International's view appears to be quite realistic.

"Apart from the United States (and to a much a lesser extent Europe, Australia and South Africa) the use of rail based intermodal concept remains minimal. Target areas are Europe, India and China."

('Trend Spotting', Containerisation International, July '95, page 55)

It is very interesting to learn how developing countries utilise their railway for multimodal transport and address the constraints of limited railhead capacity, single or narrow gauge tracks, old rolling stocks, smaller gauges, fewer wagons, long and unpredictable transit times, etc.

For China, inland movement by rail is the lifeline for its trade as it is the only national transport network that is available for carrying containers.
Without a national highway system, China is, and will, remain very dependent on its rail system. The rail network forms the backbone of the country's overall transport system."

(Kevin Hyde, Chairman and Chief Executive Officer of the Kowloon Canton Railway Corporation at the Intermodal Expo in Atlanta, Port Development International, June 94, page 35)

The backbone of the rail network is stretched in terms of infrastructure and equipment due to the explosive growth in trade. Ministry of Railway's (MOR) facilities are presently geared towards non-containerised cargo with the rates charged on unit rate/tonne/Km. These indicate unfavourable terms to container transport. Along with the rates the limited handling facilities in major cities of Tainjin, Shanghai and Liayungang which also pose additional problem to multimodal movement.

In order to overcome these issues the MOR in many developing countries have adopted various strategies.

1. Focused approach.

Realising the importance of their railways the Ministry of Railway (MOR) has worked out a railway expansion strategy through new routes, double tracking, electrification and capacity enhancement. The Second Beijing-Kowloon railway (to be ready by end 1995) is expected to double the main north-south rail trunk line capacity.

The phenomenal growth in container movement in the future is expected provide opportunities to neighbouring Hongkong. The multimodal connection to Hongkong is very critical for China. Mr. Dick Chan, GM Freight, Kowloon Canton Rail Corporation (KCRC), Hongkong opines,
"Assuming China's Foreign Trade will grow at the rate of 10% per year for the rest of the decade, (and we know this is conservative) it is estimated that China's container trade market will grow to 11 Million TEUs with 6 million passing through Hongkong. About 1/3rd of that China - Hongkong traffic comes down to the south by rail".

(Hongkong's strategic intermodal connection to China, Asia Pacific Containerisation conference at Hongkong on 26-27 Sept'1994)

To keep up with this growth, KCRC operates weekly container block train service between Hongkong - Wuhan and Hongkong - Zhengzhou in collaboration with China Railway Container Centre((CRCC), a subsidiary of Ministry of Railway). The block train service between Hongkong - Zhengzhou in Henan province links in 70 hrs(approx. 3 days) as compared to 7 days required for trucking service.

Rail connections between Kwai Chung box terminals to the nearest railhead with KCRCs and Chinese mainland networks are also planned in an effort tap the large outputs.

2. Acquire Expertise

In an effort to gain expertise and improve its rail system the MOR has signed agreements with 2 US rail companies, namely, Union Pacific Railroad and CSX Corporation. The underlying aim of the agreement is to improve productivity, profitability and service quality. The joint project would set up intermodal network services and provide modern technology together with management systems to operate it.

3. Reduced transit time with higher speed.
containers. At an initial expense of US $ 13.1 Million - 30 conventional wagons would be converted (by replacing bogies and the braking systems ) into high speed units in order to achieve a speed of upto 120 Km/ hr. It is estimated that transit time on the Busan/Seoul route (300 miles) will be reduced by 1-2 hours. However the larger achievement will be in increased track capacity by over 20%. To increase the number of such wagons in use, the KNR is encouraging private companies to convert their own wagons to high speed units.

4. Decentralised operations

The rail movement of containers in India did not pick up initially as railways were controlled by Central government, while Shipping & Ports were controlled by Surface Transport ministry. Container Corporation( CONCOR) was formed under the railway Ministry, exclusively for movement of containers inland by rail. Concor now operates 23 Inland Clearance Depots (ICDs), Container Freight Stations(CFSs), domestic and container port terminals and dedicated container trains. Each year from its inception Concor’s throughput has increased by over 50%.

<table>
<thead>
<tr>
<th>Year</th>
<th>TEUS Handled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993/94</td>
<td>155,585</td>
</tr>
<tr>
<td>1994/95(6 months)</td>
<td>206,000</td>
</tr>
</tbody>
</table>

(Source: ‘Concor’s success’, Containerisation International, June 95, page 28)

An independent and decentralised operation within Ministry of Railways has reaped rich dividends .The success of the operation has been such that even domestic movement of containers now forms 33% of CONCORs movements.

5. Alternative routes for seasonal movements.

Zimbabwe’s main containerised freight is Tobacco which comes from Harare. Shippers use both the options of movement i.e. through Mozambique’s port of Beira
and the South African port of Durban. The movement through Beira is not entirely seamless as the port has few mainline vessels and feeder vessel carry the containers to Durban. Rail link to Durban from Harare is a seamless one. However Beira is used as it is cheaper with US $927 per box of 40 feet against US $1664.3 for Durban. The other factors affecting the choice are transit time and security of cargo. At Beira, the railway is old and unreliable power supply in the port makes scheduled transit time a difficulty. The Durban option is taken by some shippers. However when the tobacco season begins both the routes are used. The National Railway of Zimbabwe which runs block trains, carrying 68 TEUs each, to Durban and Beira plays a key role.

6. Wider national and international network
Malaysia’s national rail company, KTM Berhad, has plans to link the country’s major ports to each other and to ICDs. The lack of modern rolling stock to handle the growing volumes has hampered this plan. Meanwhile efforts are directed towards improving the operational systems and service frequencies. With an investment of Malaysian Ringets (RM) 1.5 billion, a double track system covering Kuala Lumpur - Klang is expected to offer further opportunities for KTM berhad to exploit intermodal movement of containers.

The State Railway of Thailand, (SRT) plans through connections with China (Kunming in Yunnan Province) via Laos, to establish direct links to get importers and exporters to route cargo via Thailand’s ports rather than pearl river delta in China. This new feature in which rail multimodal connections, are used to generate cargoes from across the borders, and provide national ports with competitive quantities, is becoming popular.

7. Leasing-out tracks
Manila based International Container Terminal Services (ICTS) will help in building and operating a 2.5 miles rail spur linking MICT - berth 5 with the Phillipines National
rail network. A Memorandum of Agreement was signed by ICTS with Phillipines National Railways (PNR) for use of its tracks on the Manila- San Pedro and Radial road 10 to Tutuban. ICTS will entirely own its equipment, railcars, locomotives and other support equipment and pay an annual user fee. This is also an effort to reduce the national railways involvement in purchase, operation and maintenance of rolling stock.

8. Customer orientation

Ferrocarriles Nacionales de Mexico (FNM) (Mexican national railroad) subdirector for planning and system, Mr. Francisco J. Gorostiza, states the plans of FNM to change its orientation,

"The objective is to change the rail road from an enterprise designed just to operate, to an organisation dedicated to fulfilling the requirements of its customers - make it a thriving business".

('Railroads major goal', Lloyds List, 27 Jan’94).

FNM’s programme of change includes reconstruction and rehabilitation of locomotives and rolling stock, organisation of unit trains, operation of intermodal rail terminals etc. The most appealing feature, directed towards customer service is the establishment of modern computer and communication systems. Through Union Pacific Technologies system (UPT), FNM is providing real-time update of train movements to the Association of American rail roads. With this they have achieved complete visibility of rail shipments.

A good indicator of the extent of cargo moving multimodally, by rail, is the extent to which dedicated block trains are operated. Although commonplace in the USA, double stack trains do not operate in most developing countries. The table below gives a broad overview of the block trains in operation in some developing countries.
TABLE V
BLOCK TRAIN SERVICES IN DEVELOPING COUNTRIES

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>ROUTES</th>
<th>FREQUENCY WEEKLY</th>
<th>DIST. IN KM</th>
<th>CAP. IN TEUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>BOMBAY- N.DELHI</td>
<td>4 EACH WAY</td>
<td>1385</td>
<td>70</td>
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<tr>
<td></td>
<td>JNPT -N.DELHI</td>
<td>1 EACH WAY</td>
<td>1448</td>
<td>80</td>
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<td></td>
<td>HALDIA - GUAHATI</td>
<td>2 EACH WAY</td>
<td>1163</td>
<td>80</td>
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<td></td>
<td>MADRAS - N.DELHI</td>
<td>1 EACH WAY</td>
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<tr>
<td>MALAYSIA</td>
<td>PORT KLANG-PENANG</td>
<td>42</td>
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<tr>
<td>KENYA</td>
<td>MOMBASA- EMBAKASI</td>
<td>2 EACH WAY-ME</td>
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<td>PAKISTAN</td>
<td>KARACHI-LAHORE</td>
<td>5 PER WEEK</td>
<td>1220</td>
<td>70</td>
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(Source: Block Train Services in Multimodal Transport, UNCTAD, page23-25)

ROADS

The rail network though better for longer distances cannot achieve a door-to-door reach to the industries and exporters which are based away from a rail head. The final phase and completion of the concept of multimodal transport is through the door-to-door service. The road networks have a wider coverage as compared to rail thus giving the door-to-door reach. The roads are ideal for short distance haulages from the industrial areas to the nearest railheads.

Roads in most developing countries are not ideally suited for multimodal movement of containers due to bad maintenance because of high maintenance costs, congestion...
due to narrow roads, inefficient trucking by private owners, multiple inspections at border crossings, etc. The movement by road also becomes expensive due to high operations cost of inefficient truckers and damages and losses to cargoes due to accidents and pilferage.

The most critical problem facing the developing countries is that of high maintenance and construction costs of highways. According to Mexico’s Communications and Transport Secretariat (SCT) the annual maintenance for its 29,000 miles of Federal Highways runs over US$ 700 million. A number of countries are trying to overcome problems of multimodal road haulage in different ways.

1. Private investments.
Under a Build-operate-transfer (BOT) plan SCT, is planning a 7240 miles network of superhighways to criss-cross the nation and connect most of Mexico’s major ports with its commercial and industrial centres. 1/3rd of the contracts are already awarded and 1000 miles of construction is completed. Raising investments and allowing the private sectors to participate in operating would provide a platform mainly to build new roads. A similar scheme should also be tried to existing roads on a Repair-operate-transfer (ROT) and upgrade-operate-transfer (UOT) basis. This will work better in countries where the private sector is emerging.

2. International Co-operation
Six nations of the Indo-China region, namely Cambodia, China, Laos, Mynmar, Thailand and Vietnam have co-operated and committed to build a network of highways connecting them. The Asian Development Bank will be financing the project as it will be easier to finance a single project where many countries will benefit. The principle routes are:
2. Bangkok - Laos - Da Nang
3. Bangkok - Laos - Vinh
4. Chiang Rai (N.Thailand) - Laos - Kunming(China) - Lashio(Myanmar)

The ports in Thailand and Vietnam when connected, will operate as international transit gateways for Cambodia and Laos and northern ports of Vietnam will serve landlocked areas of western China. Such international co-operation will provide ports for regions without an international port while simultaneously increasing the volumes in the potential ports.

3. Road haulage as subsidiary of Rail
In many countries the trucking business is operated by independent private operators. Such operations vary from few truck operators to large Corporate ventures. All these are involved in multimodal carriage of containers. Most small operators do not run their service efficiently resulting in very high operating costs. There is hence a wide variation in reliability and quality of door-to-door service. A possible solution is brought out in Malaysia where Multimodal Freight, a road haulage company, was set up as a fully owned subsidiary of KTM Berhad (Malaysia's national railway). It is involved in development of intermodalism to provide door to door capacity for the rail corporation. It also manages 2 container depots namely Pedang Besar and Butterworth in Penang. The seamless movement of containers is easily possible within one umbrella organisation. A well co-ordinated operation will result in ultimately providing quick and good quality of door-to-door service.

4. Competitive trucking
Aimed at harmonisation of trucking laws throughout North America and to make the road trucking more competitive, the Mexican authorities have allowed road haulage companies to use longer 53 feet trailers on Mexican roads. Larger trailers can provide competitive freight costs marginal increase in costs. This system will work on highways capable of handling such large trailers.
5. **Double tracking**

Pressed with increased demands on key link roads and in need of efficient solutions, double tracking the lanes offers a significant improvement. Initially, it may seem costly, but it saves a great deal of money for operators in terms of journey times, thereby making transportation more affordable. Shippers and consignees benefit from reduced production/processing times and quick deliveries, leading to quicker payments.

Fernao-Dias, a vital artery in Brazil's major economic zone, connects Belo Horizonte with Sao Paulo. The 560 km road was formerly congested and single tracked. Upgrading to a 2-lane carriageway at USD 635 Million resulted in a 25% reduction in journey times and operating costs.

**Inland Clearance Depots**

Inland clearance depots are locations where containers are pooled together and custom cleared before onward movement inland or to seaports. The main reason for their development is that in large countries, it's challenging for customs to perform door-to-door clearance of containers. Containers are gathered and stacked near crucial rail locations for clearance. In smaller countries, depots are used for consolidating containers before onward movement by rail to seaports. Some depots also handle stuffing and destuffing of less than container load (LCL) cargoes. Although the uses may differ, ICDs have become an essential part of multimodal transport.

The setting up of ICDs involves acquiring large land areas, installing latest container handling facilities, storage areas, computerised networks, and laying of good road and rail tracks.
rail links. It is practically a complete container port also sometimes known as a Dry port.

In many developing countries the ICDs are operated and managed by the national railway companies. In some countries the investments and operations are jointly made with private companies. Current activities in the development of ICDs in some developing countries are discussed below.

KTM Berhard’s (Malaysian national railway) wholly owned subsidiary “Multimodal Freight” has been entrusted with the development of ICDs linked to country’s railtrack system. Other ICDs are being developed with joint funding. Ipoh cargo terminal is developed at Nilai, 70Km from Kaula Lumpur, at a cost of RM 120 million which is joint venture between state government and private investors Syabinas Holdings. At the new industrial area of Sepang, Mengkibol depot with direct access of both road and rail at RM 20 million to feed the Johor port by rail through road inputs is being developed.

Concor a subsidiary of the Indian Railways, has set up 23 ICDs all over India to facilitate inland transport. It is estimated that only 15 % of 1 million TEU movement moves through the ICDs. The reasons attributed are lack of awareness, inadequate institution facility and infrastructure.

International container terminal services operator of MICT (Manila International Container terminal) is setting up ICD in Cabuyao Laguna, 40 km from Manila at $195 million which includes land cost, upgrading of existing rail facility and equipment such as three stackers and rubber tyred gantries.

A well planned ICD at Lat Krabang, 25 km east of Bangkok, one stop facility to distribute and stuff containers is being set up. It will be equipped with reefer points,
container handling areas, warehouse sheds, 4 storey office and a workshop to repair containers.

As can be seen above, the development and setting up of ICDs involves investment, though lesser than a seaport it is very large. It is justified to have ICDs where the existing and potential cargo volumes will make the ICD independently viable. All care must be taken to work out a cost-benefit study of each ICD or else risk the existence of highly capital intensive facility lying idle. Involving the private sector of the region, in development and operations of ICDs, is probably the best formula. The private sector will exercise utmost caution in making their ventures viable.
Chapter 2.1.3
BANKING AND INSURANCE SERVICES

BANKING SERVICES

Developing nations with a high growth in trade, have a broad-based banking system catering to the needs of the industry and trade. They are gearing up to be at-par with the international system and many have overseas branches to support their international operations. Those in lesser developed countries have negligible network overseas and cater only to basic banking activities locally.

Peculiar problems facing the trade in their dealings with local banks are discussed below.

1. Closed Banking system

Most developing countries have a closed nationalised and monopolised banking systems. Foreign banks with a global network are either not permitted or their activities are restricted to only specific areas. The effect is that lack of competition brings complacency and small overseas network increases the length of chain processing the documentary credit. As a result the documentary clearance and payment takes inordinately longer. The advantages sought out of an expeditious Multimodal transport operation are never realised and delay/non-payment by the banks drives the proverbial final nail.
2. Short funded Shippers.

Shippers exporting goods from a developing country generally operate on a slender margin of time and credit. Their existence as well as future plans are dependent on how efficiently his documentary credit is processed. His eagerness to get the goods across on a quick multimodal system, through an MTO, is mainly to get paid promptly and release his funds for more productive activity. Speedy clearance of payments is what is required by these shippers from the banks. The banks cannot do just that in a number of cases. The short-funded nature of the shipper thus aggravates the problem.

3. Lack of awareness.

Although banks are well organised there is a lack of continuous training and information, especially to personnel making decisions about Documentary credit. The UCP 500 (Uniform Customs and Practice for Documentary Credit- International Chamber of Commerce publication no 500) came into effect on 1st Jan 1994. Under article 26, Page 33 it explains clearly the conditions for accepting a document covering multimodal transport.

"if a credit calls for a transport document covering at least 2 different modes of transport (multimodal transport) banks will, unless otherwise stipulated in the credit, accept a document however named,..."

The bank staff, at the operational level, who are not informed of such developments would not be in a position to serve this need of multimodal transportation.

4. Shipped-on-board B/L

The use of transport documents in multimodal transport vary largely in the developing countries. Few countries use the Multimodal transport document (MTD) as proposed by the UNCTAD and under UCP 500. A number of branches inland do not recognise it and ask for a "shipped-on-board" bill of lading. This leaves both the MTO and the
shipper chasing the shipping line for such a bill of lading. An MTO or shipper based inland finds it a hard thing to do. The MTD in such cases does not effectively quicken the process of payment.

5. Rejection by the bankers

Bankers do not feel comfortable unless “ABC lines” is printed on the top right hand of the bill of lading as the name of the carrier. Inland destinations on the bill of lading or the multimodal transport document is also treated by the bankers as a discrepancy. This happens because the document checkers are used to the practice of checking the port of loading and discharge. Shippers located inland, dealing with a branch of a major bank has to waste his time and energy in explaining the entire process. The branches of these banks on the other hand persist on recognising sea transport and seaports as the main proof for making payments.

6. Overcautious banking attitudes.

Documentary clearance through banks world-wide is a slower process and has not kept up with the speed of logistics. As payments are made purely on the basis of documents produced, the eventual responsibility lies with the paying bank. Documentary fraud and litigations have put the banks in embarrassing situations in the past and have brought in an overcautious attitudes in the banking system towards processing of documentary credit. The Banks thus opt for the safest option of rejecting the documents or asking for additional documents and written correspondence. A more pragmatic approach of using faxes, E-mail etc. should be used wherever doubts arise. The problems with banking system should be dealt with by the trade facilitation committees wherever they already exist. In absence of such a trade facilitation committee, the regional trade bodies or the multimodal transport associations should actively pursue these issues with the bankers. Only a vigilant
shippers organisation can ensure a prompt customer-service orientated approach from the banks.

**INSURANCE**

Containerised transport has brought added security to the cargo, which was otherwise easily damaged with rain, fire etc. Multimodal transport through containers should ideally be perceived as a low risk operation from the insurance standpoint. It should therefore attract lower premiums due to lowered risks. Insurance of Multimodal transport in the developing countries has different dimensions due to the following reasons.

1. Incorrect handling by the stevedores and the port authorities damage containers. Holes in the containers is a common problem due to the use of forklifts in moving the containers.

2. Transportation of containers on trucks which are only improvised trailers. Improper locking and fastening devices, result in toppling and damage to containers. Third party damages also result due to this.

3. Gaps in the changeover between modes of transport lead to containers idling at intermediary locations. Pilferages and thefts at such points increase the risks to the cargo.

4. The varied liability systems under various modes, further complicates the issue of insurance which is closely linked with liability.
All the above issues do not encourage the mainly monopolised, insurance industry to cover the risks through the complete multimodal link. The conservative approach of the insurance industry is clearly spelled out

“ If the transport and shipping industries are known for their innate conservative ways, so are the underwriters who have traditionally served them.”

(TT clubs Information brochure in the MT workshop by UNCTAD at World Maritime University in 1995.)

The insurance industry has to adapt to the changing transport practices by transcending from their conventional terms such as: Marine and non-marine insurance, cargo Insurance, liability insurance etc. There are no national insurance companies which can give complete multimodal cover required by the MTO in the developing countries. What is required actually is a wider international cover from the door of dispatch to the final door of delivery. Internationally also there are few such insurance covers available.

The shipper in the developing country is interested in getting his consignment covered in the best possible cover at the best price. The insurance companies on the other hand are looking for clear liability and larger number of insurers in order to offer better rates. In such a situation it is justified to use international insurance companies which offer better rates with a larger number of insurers in their business. The national insurance companies can then take up from these international insurance companies or act as their local representatives.
Chapter 2.1.4
ECONOMIC AND SOCIO-POLITICAL ENVIRONMENT

The basic infrastructure of ports, railways, roads and waterways form the on-stage structures in the multimodal act. However, behind-the-screen players, i.e. the economic, social and political environments prevailing in the country, have the strongest impact on the multimodal activity.

FOUR INFLUENCING FACTORS

There are four major forces influencing any developments within a country. These are

1. Social factors: relate to the social structure and its perceptions to development.
2. Political factors: relates to the national political framework and stability.
3. Economic factors: relates to the economic progress of industry.
4. Technological factors: relates to adaptation to state-of-art technologies.
Developing countries with strong economic activity stimulated by free trade and liberalisation, enforced by political will and supported by the society form strong technical production bases resulted in increased. Increased trade then puts more pressure on industries which spread inland. Such inland movement of industries then provides impetus to multimodal transport.

The US exports to South America, reached 4,68,000 TEUs in 1994, showing a growth of 18% over the earlier year. This happened mainly due to healthy economies resulting from a resurgence in industrial activity and trade liberalisation. The growth forecast for 1995 is 20%. To cope with this increase it is expected that the multimodal activity will also increase.

The political stability and economic activity go hand-in-hand. The developing countries with a stable political framework can provide fertile grounds for economic development. It is very important for trade in general and multimodal transport in particular, that a stable political environment and growing economic profile exists in the country.

Unfavourable socio-political and economic environment leads to many problems in multimodal movement of goods in developing countries. These are:

1. Pilferages and thefts.

The sudden shift from communism to a free market economy has left many in the former USSR to fend for their needs. One course, thefts, has severely hampered the multimodal transport in Russia resulting in missing containers. In the year 1993, there were 100,000 transport related crimes and cargo worth $ 7 Billion was lost. Any amount of trade/transport reforms would not bear fruit unless such basic social issues are harnessed.
The container unit is suited for many alternate uses and the units moving inland find such uses through unscrupulous traders and consignees. In many countries empty containers are not returned from the consignees warehouses or even through Container freight stations. The shipping lines hiring these units, subsequently do not encourage inland transportation of containers due to the fear of non-return of empties from the consignees and subsequent penalties from leasing companies. Consequentially, containers are stripped and loaded at the ports and held back from moving inland. The entire multimodal concept is thus throttled.

3. Discordant decision-making.
Volatile political situations see frequent changes in the decision makers at the national level. In countries where trade and commerce are heavily laden with political decisions the effect of changed decisions is more pronounced. Policy issues relating to transportation and facilitation of multimodal transport are addressed differently or simply ignored. This leaves a large number of inconsistencies that neither promote trade nor lay down clear transportation guidelines but only create an atmosphere of utter confusion. The right climate for multimodal transport is thus a far-fetched one. It is extremely important to have a stable political order.

4. Additional handling costs.
Wherever the shipping line or the shippers/consignees provide additional security for the inland movement in protected convoys, the cost for such arrangements goes up with the threat to the cargo still persists. These additional costs attached to the products reduce the profit margins for the exporters.

The economic health and progressive attitude towards socio-political issues foster growth in multimodal transport by providing a conducive and encouraging climate. The lack of these factors however could stifle the growth. It is very important to
match these 4 factors to promote trade and Multimodal transport. This can be achieved by the collective efforts of business interests, transport operators i.e. the trucking and shipping industry, shipper's councils and freight forwarding community and the national decision makers.
Chapter 2.2.1
GOVERNMENT POLICIES ON MULTIMODAL TRANSPORT

"Government can speed the shift to intermodalism by both stepping in and stepping aside".

Multimodal transport is an all encompassing activity with its vital ingredients drawn from national infrastructures like rail, road, shipping, ports and the trade at large. Trade and Industry are the driving forces giving power and speed to the multimodal transportation activity. The governments main concerns are to provide a platform to improve the exports/imports and general economic growth accruing from it. The governmental policies in developing countries on multimodal transport are however directed towards making legislation and over-regulating the activity. The trade on the contrary wants the government only to invest in all infrastructures and maintain them. At the same time they do not want any regulations but only freedom from controls.

In most developing countries the government themselves own these infrastructures and are directly responsible for their maintenance and development. The policies are then directed towards improving them and making them suitable for multimodalism. The task of building and maintaining infrastructure such as rail, road, communication and service is difficult due to the problem of allocation of scarce resources.
At the same time they have to play the role of a facilitator over-seeing the activity in totality and providing the right climate. To achieve this the government has to interact with trade and lay down policies which reflect the needs of the trade. In Developing countries where trade growth is fast, the government realises the importance of multimodal transport and adopts flexible and open policies in line with the needs of the trade. Policies for other countries with slower growth are not so vigorously pursued.

Many governments have adopted innovative policies for financing infrastructure projects. The Phillipines government’s policy of built-operate-transfer (BOT) has shown good results and has prompted more private funds into improving infrastructure.

The geographical location of some countries gives them certain advantages which they can utilise. Use of a well developed port in a neighbouring country could be a better option than starting from developing an entirely new port. A real situation exists in South America where some governments are wary of intermodalism through ports of neighbouring Brazil. Such intermodalism is not permitted and is illegal.

Mr. Lou Notaro, Vice President of operations for Crowley American Transport, leading concern in South American Trade opines,

"Basically, South American governments do not want monies leaving their countries for services performed in Brazil. They want to prevent losing their currencies"

(Thuermer, K, 'South America in the making', Intermodal Shipping, Oct’94, page 29)
The policy in this case looks at short term currency situation while the growth of trade in totality would yield much larger benefits. The precious resources which will have otherwise been spent on a new facility could be used in other more wanting area.

In Thailand the Ministry of Transport and Communications (MOTC) has four subdivisions viz. Telecommunication, Rail, Road and Maritime Transport which operate independent of each other. There is no linkage between these departments which is not very conducive to multimodalism. In order to compensate this a National Multimodal Transport Facilitation Committee was set up. The committee is ironically chaired by a Deputy Minister at the MOTC. The principle aims of this facilitation committee are to review various transport legislation, to develop inland clearance depots and to improve land connections between Ports and ICDs. This a classic case of the government starting up on the right note by bringing all the related departments under one umbrella and then later losing by operating them independently. However the final outcome of forming a facilitation committee is indicative of the pressure put by the trade.

In countries with the advantage of a well laid out routes for trade the government policy has to only identify and address the main issue. The chinese case is illustrated by the following observation made by Justin.F.Zubrod, Managing Director, Transportation Group. A.T. Kearney,USA, at ‘Intermodal 1991’, held in Berlin on 12-14 Nov’91.

"It is estimated that 98% of chinese external trade is carried by sea. More than 95% of the cargo that originates and terminates in China, starts by rail. No other country in the world that is this focussed. These are the key components of containerisation and intermodalism that most countries lack".
The recent government initiatives in China are aware of this status and Beijing has now deemed rail development as the second most important national priority behind agriculture.

Another useful stand in policy making, especially for the developing countries, is maximum utilisation of existing resources before the need for investing in new infrastructure. Athumani Jangao, Director General of the Tanzanian Harbour Authorities said

"Better and more efficient use of existing facilities would enable greater throughput without necessitating infrastructural changes".

('Portnet strives to balance demand', Lloyds list, 25 March'94)

Few countries have a policy of keeping up with the needs of the market as and when they arise. The Malaysian ports had a record level of total throughput of 1.8 Million TEU's. In an effort to keep-up with the growth the Malaysian government is improving operating systems, services frequency and physical facilities in an effort to add customer confidence and greater support for the terminal. This policy is ideal for the developing countries which are fast growing with highly focussed resource management.

The structured policy framework for multimodal transport is really not possible in developing countries where the trade is in a state of flux. However what is most critical for them is to respond to the needs of multimodal operators and users. Government policies should be directed towards trouble shooting and facilitating on a short term and developing the infrastructure on a long term. State owned infrastructure should be made more efficient using private investments to be able to handle multimodal transport.
Chapter 2.2.2

LIABILITY REGIME

Today, with the extensive use of containers and efficient handling technology, the chances of damage or loss to the cargo, are substantially reduced. However, transport of large number of containers in a multimodal system coupled with tight shipment schedules, puts a lot of pressure on the carriers, stevedores, warehouses. The continuous movement of cargo through multiple modes makes it susceptible to accidental damage. In addition the human element contributes to damage and loss of the cargo due to oversight and errors. All these factors become more conspicuous in developing countries which have inadequate handling equipment, improper storage and poor rail/road haulage. The probability of damage and loss is thus higher. The question of liability therefore becomes very important to multimodal transport in the developing countries.

In the multi-player scenario of multimodal transport, it is difficult to identify the exact stage at which a damage or loss occurs. In such an event the question of liability becomes quite complex and is subsequently borne by the MTO. Where the modes leading to damage in handling are identified, the liability is governed by independent national legislation's for each of these modes. Each mode i.e rail, road, sea and air have separate liability regimes and it becomes very difficult for any MTO to apportion the exact amount of liability involved or likely to be involved. Also, there are gaps and uncertainties in the amount of liability at certain interfaces like stevedores and warehouses. In these cases the liabilities are neither explicitly stated nor amicably settled. Certain authorities like the port consider themselves above any liability regime. The scenario of liability is thus a chaotic one.
In the International Multimodal System there are complex and overlapping regimes to address the problems of liability. The UNCTAD had drafted the United Nations Convention on International Multimodal Transport of Goods, 1980 (MT Convention) with a view to have a single international regime. The basis of liability under the Multimodal Convention is the same as the Hamburg Rules. The MTO is liable for loss of or damage as well as delay in delivery to goods in his possession. The Convention provides for a liability limited to an amount not exceeding 920 SDR (USD 1,335) per package/unit or 2.75 SDR per kg of gross weight of the goods.

The multimodal Convention allows any other applicable international Convention or national law to prevail over the multimodal Convention if the liability limit specified in such an International or National law is higher than in the Multimodal Convention. In other words, it seeks to raise limit of liability to the highest level under prevailing International Conventions. The other international Conventions dealing with liability of independent modes of transport are:

1. The CIM (Convention Internationale Concernant le Transport des Marchandises Par chemin de Fer) i.e. Convention on International Merchandise carried by Rail.
2. The CMR (Convention de Marchandises par route) i.e. Convention on Merchandise carried by Road Hauliers.

All these different regimes of liability were drafted independently for the cargoes handled under each of the respective modes. When the Multimodal transport began, there was a need for a uniform and all encompassing international liability regime. However, the ocean carriers remain, in effect, the principal Multimodal Carrier as they carry cargo through the main ocean leg. For the other unimodal operator, multimodal carriage of goods remains an appendage. Hence most of these Conventions hence
cater to needs of those specific modes and appear fragmented when applied in the context of the multimodal transport. To add to the confusion, some countries have ratified and some have not ratified these international Conventions. Hence the applicability of such Conventions differs widely in various countries. Those countries who have not ratified these international Conventions have separate national laws to specify liability. Applied in each country’s geographical and economic situation, the amount of liability and its conditions become highly diverse.

Though the Multimodal Convention was enacted in the year 1980, even after 14 years, it has yet to come into force. Requiring 30 countries to become contracting parties the total number of countries ratifying so far is seven. All the seven signatories are developing countries namely; Chile, Malawi, Mexico, Morocco, Rwanda, Senegal, Zambia. Two other countries, namely, Norway and Venezuela have signed the Convention subject to ratification.

Indications are that the Convention is not likely to come into force in the near future. The reason for scarce response to the MT Convention is because it is based on the Hamburg rules which has not found many friends among the shipowners. Shipowners still are the largest operators in multimodal activities. Hence the major maritime nations have not given a favourable response to the Convention. This Convention is the sole effort made in integrating and amalgamating different liability regimes involved in multimodal transportation of goods. Having failed to get a veto, currently, there exists no single international liability regime.

In the absence of an international regime, few countries have instead made their own Multimodal transportation legislations. Such legislations are highly localised for multimodal transportation within these countries and use the UNCTAD MT Convention as a basis.
These laws generally consist partly of cut-and-paste versions of different international Conventions applicable to transport, partly of original provisions. Needless to say that the regimes implemented thereby are likely to be different from each other and from international regimes available, being tailor-made to individual national or regional needs.


The basic aim behind instituting such national or regional legislation is to:

a. **Promote multimodal transport within the country or the region.**
Most of the containerised traffic in many developing countries even today moves port-to-port. In an effort to increase and facilitate inland movement of containers, national legislations on multimodal transport has been introduced. It is the tool through which the multimodal traffic is recognised by law and regulated. The multimodal legislations specifies terms and conditions of conducting multimodal transport. Responsibilities of consignors and the MTOs are also specified. It also lays down treatment of liabilities in case of loss or damage to goods under different situations. With these specifications covered by law, the multimodal legislation thus becomes a path-finder for the MTOs and users of multimodal transport in carrying out Multimodal transport. The legislation hence acts as a catalyst in the development of multimodal transport.

b. **Ensure that only resourceful and responsible MTO’s carryout this activity.**
A number of developing countries are plagued by the problem of fly-by-night freight forwarders who pose as MTOs and even issue Multimodal Transport Documents. Obviously the necessary expertise to carryout the activity and financial backing to cover any liability is lacking. With the introduction of the multimodal legislation an
c. Define Procedures in the event of liabilities.

The various regional and national Multimodal Conventions lay down procedures for dealing with liabilities in case of loss and damage. It states how notice for loss or damage should be given, specifies time limit after which the liability would not be discharged, specifies limits of liabilities and jurisdiction, etc. The crucial aspect of giving clear procedure is to avoid ambiguity and create confidence in the use of Multimodal Transport.

d. Modify existing laws to facilitate MT of goods.

As an addendum to the MT act some countries have made amendments to the other national legislations which relate to individual modes of transport, to suit the needs of MT. Terms used in MT such as Multimodal Transport Document (MTD) and containers and pallets are now inserted in these legislation. Though very basic in nature, the amendments are indicative of a conviction towards adoption of multimodalism. It opens doors to a flexible attitude towards the total transportation concept.

As a fallout of the legislation there can be:

e. Control and reduction in losses and damages to cargoes.

Once the amount of liability involved is known, both the shipper as well as the MTO are aware (through the act) of the liability payable. Thus the legislation with its liabilities forces them to take necessary precautions in handling and effectively reducing losses and damages.
The following developing countries have instituted either a regional or a national legislation for multimodal transport.

2. The Multimodal transportation of goods Act, 1993 of India.

The issue of liability is one of the core aspects of multimodal transportation in developing countries, especially in view of the uncertainties faced in transportation. The shippers faith in this unified mode of transport will not be consolidated unless the multimodal operator is responsible and liable for any loss or damage. The MTO would benefit from the fact that he will know in advance the extent of liability he is taking up and the resultant risks he has to take. The liability issue, therefore, has to be addressed in the legislation as well as it’s application on a priority.
For decades Customs authorities of a country were one of major collectors of duties for goods traded through its borders. Over the years efforts have been made to increase the efficiency of these earnings while promoting international trade at the same time. It is this balance, that the Customs authorities the world over have tried to achieve.

Many developing countries operated, some do so even now, in protected inward-looking economic environment. The objective for many was to protect the local industries by imposing heavy customs levies on imports. Complicated customs tariff were developed and are currently in existence in some countries. In order to effectively carry out these duties the customs were given freedom to inspect the goods and verify with the documentation/declarations made by the importers and exporters.

The Customs in most countries comes under the Ministries of Finance and the emphasis from the ministries is on collection of higher revenues. Targets of actual revenue earned are monitored in isolation and the overall interest of trade and commerce is lacking. The trade and export normally is under the purview of the commerce ministries and few developing countries have realised the merit of an overall view towards trade.

With the collapse of the communist block and signing of the GATT agreement, world trade is expected to expand. Protectionism is slowly dying out. However like
proverbial camel entering the tent, a rigid customs authority may in counterproductive to the economy at large. The customs authorities in the developed countries still remain the guardians of the border and refuse to realise that they are there to facilitate the trade rather than stalling it.

To add to the naggingly stubborn attitude, containerisation of general cargo has made the customs authorities even more rigid. Containerisation required the customs to bring through a radical change in the philosophy of check and control. Most customs authorities in the developing countries are not ready to compromise on anything less than stripping and examining each and every container that arrives at the port. Many countries even insist on a customs inspection of export containers.

"India is perhaps the only place left in the world where you have customs giving all the boxes an outgoing inspection. Systems must be changed and random checking is the solution"
(Capt. P.P.Radhakrishnan, former Chairman and Managing Director, The Shipping Corporation of India Ltd. "A dead elephant in the doorway" Containerisation International, Feb'95, page 79)

The recent customs ruling in Russia is aimed at preventing tax avoidance on goods imported by road. It states that all the customs and excise duties be paid in cash at the border before goods are brought into the country. The trucking companies unable to make this transaction try to find ways around the customs regulations leading to inordinate delays.

The benefits of multimodalism are nullified if the containers are opened and held in sheds and container yards for checking; exposed to pilferage and damage. Years of opening packed crates for examination has set in a psychological block. Most
authorities are not ready to accept documentary proof and random checking of containers.

The agony of the shipper or consignee is aggravated with large number of forms, declarations and indemnities which have to be routinely filled-in and submitted to more than one customs agency. Goods awaiting proper customs documentation is a common sight not only at the ports but also seen at airports. Variable customs tariffs have further complicated this process.

The use of customs in the dual role of collection of duties and in the policing activity of prevention of drugs and arms traffic has made the task of facilitating multimodal transport a more uphill one.

The door-to-door movement of containers inland is further hindered when hired empty containers are treated by the customs as imported goods. These empties have to be re-exported within a stipulated time period failing which additional duty and penalty is levied. The multimodal operator has to continuously follow up on the empties send inland. The tracking of containers and bringing back to the original port of landing increases the overall cost of operation defying the purpose of multimodal transportation.

Participation of the private sector in the establishment and operation of Inland clearance depots in many countries has not been encouraged by customs agencies who are apprehensive about the bonded status of goods. Customs authorities have set up offices in many inland clearance depots. Additional costs towards establishing full-fledged customs is incurred by the end user in terms of overtime and other charges and more importantly for the delays in shipment.
The stuffing and destuffing of goods at the shippers or consignees premises is treated with suspicion. Such a mindset has resulted in virtually throttling much of the inland door-to-door movement in many developing countries.

However the scenario is not bleak and dark all over the developing world. Customs authorities in a few countries have shown more wisdom and are now sitting across the table to discuss solutions.

"Customs should not be seen as manning a barrier to international trade, but as an integral part of the international trade processes".
(Mr. Sakkie Theron, Director Operational systems, Dept of Customs and Excise, South Africa. Lloyds list, 25, Mar 1994)

Although the realisation seems to have come, translating words into action is becoming a painfully slow process. The stress should be on looking at customs as a facilitator rather than a hurdle.
CHAPTER 2.2.4
MULTIMODAL TRANSPORT DOCUMENTATION AND EDI

“In any country, wherever you are, wherever you live, it is impossible to stay away from information in the future. You can always run from information but can never hide”

(Rune Svensson, President Volvo Transport Corporation, Sweden, ‘It must be the intermodal decade’, Intermodal’92, page 23)

The essence of Multimodal transport lies in thorough understanding of the process of logistics by all the agencies concerned and tuning their individual information needs and exchanging so that the entire system moves as one single unit. Ants moving their catch could be a close comparison in understanding this philosophy. There is an invisible yet continuous communication or signalling system which enables the ants to carry out the entire operation smoothly in a well co-ordinated manner. As the handling technology and means of transport are becoming efficient and faster, there is greater need for information exchange to keep pace with this movement. Major aspect in multimodal transportation then is the swift interchange of information before the goods reach each nodal point. The information should be real time and exchanged with various bodies involved.

A stepwise process of analysis, rationalisation, harmonisation, simplification and standardisation for documents to be exchanged has to be undertaken. In fact in today’s era of paperless and on-line flow of information a re-orientation in thinking, from transport documentation to transport networking is imperative.
The major players sharing, exchanging and using documents in the Multimodal transport chain are the Port and Customs authorities, Shipping companies, MTO's, freight forwarders, shippers & consignees, stevedores, Rail and Trucking Companies, Inland Clearance depots, Banks and Insurance companies.

The significance of communication and dialogue is felt the most in international trade as it is a collective endeavour taken up by several individual interests. The various forms required to be filled for the information sought by all the authorities in the multimodal operations basically seeks information or data to be used by various agencies for varied purposes. Lack of a co-ordinated effort and rationalised information results in repetitive sourcing of same information to different agencies.

Trade procedures vary from country to country depending on national policies, customs and regulations influencing the trade. Shipping companies and transport operators waste lot of precious energy and time to prepare multiple shipping documents which require largely the same data and information. K.J.Macdiarmad, P&O containers, Regional Manager for South Asia has discussed the problems of documentation in India. He says

"An exporter has to complete a minimum of 25 forms or returns to make an export shipment"

('Pressure and priorities', Lloyds Maritime Asia, March'94, page 37.)
Paper-based documentation, processed clerically is error prone, costly and moves slowly. The presentation of physical proof of documents and manual transfers causes delays. With the use of computers a master document is prepared for each shipment and various other shipping documents are subsequently produced from this as secondary document. This results in simplifying and accelerating the documentation process. A further step of transferring these documents electronically is through a medium linking computers at different locations. Value added network (VAN) is a term used to describe a system whereby telecommunication lines are linked to an electronic mailbox facility for the transmission and storage of messages between trading partners.

Electronic Data Interchange (EDI) is defined by UNCTAD as “computer to computer transfer of commercial and administrative transactions using an agreed standard to structure the data pertaining to that transaction”. EDI is the means of conducting trade electronically. UN/EDIFACT is a set of standard messages which are designed for universal use.

The benefits accruing from the implementation of the EDI are numerous of which the major ones are as follows:

1. Increased speed and perfection in cargo clearance, which results in increased efficacy in trade.
2. Reduces duplication or repetition of data.
3. Faster movement of goods and invoices results in faster payments leaving funds for newer ventures.
4. Reduces cost of exchange of information over a longer.
5. Increases value of products and services.
In addition to the many tangible advantages of EDI, the immense untapped potential EDI holds could initiate a sea-change with the large pool of information which is available for analysis and interpretation. The varied computerised data base containing nature, quality, quantity of commodities, the manufacturers and traders, is poised to revolutionise the way in which the world will conduct trade in the years ahead.

UNCTAD has played a crucial role in bringing out the advantages of electronic document interchange by developing global standards such as UN/EDIFACT (United Nations EDI for Administration, Commerce and Transport) is a set of standards which facilitate the electronic interchange of business data between manufacturers, exporters, wholesalers, distributors, retailers, brokers, forwarders, shippers, consignees, carriers, banks, insurers, port authorities etc. UN/ EDIFACT has formed rapporteurs in various zones such as the Pan American EDIFACT, African EDIFACT, Central and East European and Asian EDIFACT Board to assist the developing countries in setting up EDI by providing the standardised formats and computer expertise.

Rudimentary transport documentation and procedures which retard trade facilitation are one of the major causes for delay to the movement of containers, multimodally, in developing countries. Investment in infrastructure do not yield the required results as the flow of information still continues through cumbersome and complicated documents. On many occasions containers arrive in time and wait for related documents to be filed-in submitted to complete the process. This delay leads to containers being stored and guarded, resulting in additional costs. The volume of documents and complicated proformas also force the exporters/consignees to operate through middlemen which push up the total cost of transportation. The costs of idle cargo and the related cost of capital tied up in such cargo increases the price of the commodities.
The importance of exchange of information rationally and through speedy electronic means has not yet gained full acceptance from all the authorities involved in the multimodal movement in developing countries. As a result, in most developing countries the authorities continue to operate international transportation through tedious processes which results in producing stacks of elaborate documents. This tendency has developed due to the misconception that controls and checks can be achieved by documenting all declarations through detailed and complicated forms for the use of various authorities.

The problems in rationalisation of trade processes and development of EDI in developing countries starts with the absence of a dedicated project champion. In most market driven economies it is the trade that is the driving force behind trade facilitation. In most of the developing countries the Governments take up the guardianship of trade and related activities. Hence the principle responsibility of taking up measures for trade facilitation lies largely with the governments. The priority for trade though important is generally not the foremost. These governments are not the best champion for the cause of trade facilitation. It results in lack of co-ordinated effort and integrated planning between various government ministries and the private sector involved in trade and transport sector.

“Making all of intermodals pieces work together smoothly depends greatly on communication - especially on productive dialogue between carriers and their partners”

(Jay Hirst, President. Alliance Shippers Inc. Intermodal Shipping, Jan’95, page 22)

The main players in the EDI for the purpose of Multimodal transport are the Port and Customs authorities along with the Shipping, Rail and Road transporters. It is
becoming increasingly important for these authorities to take the lead in developing information systems.

"The port authority will have to develop an infostructure as well as infrastructure because the mastery of information flows will be an essential condition for the mastery of the trade"

(Review of Maritime Transport, 1993, UNCTAD, page 55)

The use of electronic data processing exists to a certain extent with most private sector operators. Also a number of governments have taken initiatives for processing documents electronically but inadequate communication infrastructure viz. insufficient lines and fewer equipment prevent the system from becoming efficient. In others there is a hurry to put on the electronic hat without a thorough study of the information needs. In such a situation there is a danger of absolute failure of EDI. Low awareness amongst trading and business community coupled with traditional book-keeping practices results in low utilisation of the EDI. The most important hindrance however is the lack of collective thinking and effort in understanding the process and information needs for an effective multimodal system.

The following examples indicate the current status of development of EDI in some developing countries where efforts in EDI have been initiated.

Hong Kong had set up Trade links for an EDI system which was initially intended to be used territory wide. It has taken 6 years to reach the development phase. However its newly defined function is limited to replacing paper transaction for the Hong Kong Government's trade related departments. Meanwhile Hong Kong International Terminal (HIT) and MTL have developed their own system for container handling. The system is reported to be elaborate and efficient but caters only to the shipowners and forwarders. The shipping agents have stayed away as the local facsimile system is free while the messaging system of HIT and MTL involves a direct cost. Low
awareness of the operational benefits and full potential in such a system has resulted in this phenomenon where the shipping agents have only looked at the initial direct cost.

Amongst other things, one of the visible benefits from the HIT’s booking system is the reduction in congestion on approach roads to the terminal. After full adoption it is expected to make significant reduction to the traffic around the terminal. This is a classic example of how speedy exchange of information brings about physical and financial efficiency in container movement.

Malaysia emphasised the use of EDI back in 1986 when a National Trade Facilitation Committee was formed to address the procedural and complicated paperwork problem. Aligned Document System (ADS)/Electronic Data Interchange (EDI) was mooted by a subcommittee on Banking, Credit, Insurance and Exchange control. In 1993 EDI-Malaysia launched the National EDI clearing house. An EDIFACT committee headed by Government consisting of both Government Departments and private sector was formed. It consisted of active EDI users such as the National Chamber of Commerce and Industry. One of the main features in this committee was the involvement of the Prime Minister’s department. The involvement of the leadership as a champion to the project brings better results in many developing countries. Although there are still few bugs to be cleared, the major gain is that EDI is gaining the confidence of the Malaysian Business community.

A number of major ports in India have developed computerised system which operate independent of the system in use by the Customs Authorities and Shipping Lines. The freight forwarders have their own PC based system. The situation is similar to that of information islands. Although several discussions and meetings have taken place, to integrate these islands a common network has still not materialised. As a result of this status there is little Electronic interchange of Documents. This is a situation where
each organisation is talking in a different language in need of interpreters. A single integrated standardised system on a common platform for all users is urgently needed.

Singapore, the hub port for a large hinterland in SE Asia, is an outstanding example of successful use of EDI. In 1989, Port of Singapore Authority's in-house developed Electronic Data Communication system PORTNET was developed. PORTNET is now linked to the National EDI system for Trade Declaration to Trade Development Board and Customs and Excise Department (TRADENET). The success of PORTNET can be seen with the fact that there are now over 1300 local and overseas companies using it. Another system called the Maritime Information System (MAINS) designed to integrate and streamline information flow among various parties in the Maritime community is also in operation. It serves the shipping lines, forwarding, trading and controlling agencies. Electronic interchange of shipping documents such as shipping notes, delivery orders, manifests, equipment interchange, receipts, import status and bayplans is now possible.

How essential an efficient EDI system will be for International trade in the years ahead is illustrated by the apprehensions expressed by Mr. C.N. Ramdas, Secretary; Ministry of Surface Transport, Government of India.

"It cannot be overemphasised that in a few years time, inability of traders and transport operators in developing countries to use EDI, will constitute a very serious entry barrier to world markets"


The developing nations involved in international trade should not only concern themselves of the inability to use EDI or whether it will be an entry barrier but should realise the large potential and reap the enormous benefits it would bring to trade and related services.
Chapter 2.3.1
ROLE PLAYED BY NATIONAL SHIPOWNERS

As liner shipping world-wide is getting highly competitive, door-to-door service is fast becoming an essential part within the scope of operations for liner shipping companies. Continued importance attached to the ocean leg of international transport forces the shipping lines to take the largest share of responsibility for multimodal transport. Even though liberalisation has become the buzzword in many developing countries, the governments still exercise a great deal of control on transport related matters. The role of national shipping companies in such circumstances is hence very crucial. The national lines serving door-to-door based in the country itself can better follow-up various issues affecting multimodal transport.

A highly competitive environment and inefficient operations have unfortunately left many developing countries with very little speakable national liner tonnage. There are very few countries with national lines either under the private sector or state-owned. The multimodal activity in such countries alone is perceptible. This can be found, mainly in China with COSCO, Mexico with TMM and in India with SCI. The activities of these lines have contributed towards promotion and development of multimodal transport.

Transportacion Maritima Mexicana (TMM) as part of a strategy to offer its customers a comprehensive and seamless MT operation, is now considering setting up a specialist intermodal transport company. A Multimodal transport division set up 1 1/2 years ago had a limited function involving the joint trucking venture with JB Hunt transport service for trucking operations within Mexico. The new company would include JB hunt activity and the TexMex rail operation and future land-side transport
investments. It also intends to run rail services to and from the US border and Mexico city.

The direct involvement of the national line can help in better service to the national shippers and consignees. It can take up issues specifically affecting the national multimodal transport infrastructure and policies. However direct investment in large projects by the shipping lines should be made with caution. A viability study with the cargo volume projections and freight rates should be made before committing heavy infrastructure investments. Alternative private investors should be mobilised with the shipping companies contributing the expertise and management.

Cosco plays a dual role of development of multimodal transport in China and generation of exclusive cargo for their ships. The major steps taken by them are:

1. Building and expanding feeder service through the Yangtze river passage and establishing offices and depots along the Yangtze river to serve the shippers multimodally.
2. Opening of barge service through Pearl river delta and strengthening land-haulage services.
3. Setting up freight terminals at the mainland cities of Bo Hai Bay, depots and opening of sea/rail services through joint venture with rail.

The Shipping Corporation of India Ltd, (SCI) has taken the lead in promoting multimodal transport in India by setting up its ICDs and CFSs inland. The company was the first to register as an MTO under the Multimodal transport Act and provide such a service.

The National lines should strive to influence the decision making process to bridge the gaps in multimodal transport and speed up the developmental process. They would
stand to gain with results from improved access to the markets, gaining exclusive markets, increased volume of cargo and better service to their customers.
The shippers are the ultimate customers in the entire gamut of multimodal activity. In this respect, their needs and opinion should be valued the most. The large shippers, promising huge volumes, get greater attention of the shipping fraternity. As per the survey conducted by containerisation International, the small and medium size shippers, together, generate a larger volume of 62%.

"Big shippers do not rule the world" concludes the survey. Its findings shows the following spread in size and volume of shippers.

1. Small Shippers with upto 500 TEUs shipment annually : 38 %
2. Large Shippers with over 2000 TEUs shipment annually : 38 %.
3. Medium size Shippers with 500-2000 TEUs shipment annually : 24 %.

(Source : Eller, D, ‘Shipper status exposed’, Containerisation International Aug’95, Page 55)

The temptation to tap a large portion of cargo volume through less efforts, by approaching chosen large shippers prevails with shipping lines and MTOs. As a result large number of small and medium size shippers form associations/ councils in order to increase their collective bargaining power.
The primary interest of the shippers world-wide is to protect their cargo interests, maintain schedules, ensure inland deliveries and obtain the best freight rates. With the dilution/disappearance of liner conferences, the rates have become competitive on the major routes. A common platform for negotiations of rates and sharing experiences with the shipping lines, has however disappeared with the conferences.

The shippers in the developing countries have also formed shippers councils to address specific problems in their areas of operation. These associations are very localised and present fragmented opinion of the shipper's requirements. Although issues such as quality of multimodal service are important the need to keep the exports competitive is greater. In order to achieve this, the concern for steady freight rates and surcharges remains high. One of the principle objectives of many shippers council in the developing countries is therefore to check and counter the increase in tariffs.

The Korean Shippers Council (KSC) has 50,000 members. It has a multimodal sub-committee that studies various transport options with a view to achieve savings to the shippers on inland transport. The KSC has taken up the issue of arbitrary changes in Terminal Handling Charges (THCs), empty container handling charges (ECHSs), Container Yard Surcharges (CYS). Their grievance is that the ocean tariffs are competitive but high handling charges make the tariffs incompetetive.

"We believe THCs/ECHSs are being used to compensate for revenue shortfalls on the ocean tariffs. These surcharges are having a significant impact on the trade".

(Byoung Hur, Secretary general of KSC, KSC Fights on. Containerisation International July 1995, page 62)
The increase of THC's and ECHSs at a level, higher than the actual inflation rate and variation in these rates for each trade-route confirms the view of Mr. Byoung. This trend of increasing inland rates to make good the competitive ocean rate is dangerous.

If the multimodal transport becomes a mechanism to make unreasonable margins then the advantage of such a transport to the shippers will be lost. Disillusioned shippers would then reach goods directly to the line that offer the best ocean tariff directly and desist the use of multimodal transport for fear of arbitrary increases in inland charges.

The intra-Asian market, presently, accounts for about 30 % of the world's total liner trade that is estimated to increase to 50 % by 2000. In this light many shipper's associations in the region have decided to form a single shipper's council. The plans are underway to have international co-operation in the form of setting up a Far East Asian Shippers Council (FEASC). It will comprise of FASC (Far Asian Shippers council) with Malaysia, Philippines, Singapore and Thailand as its members, KSC, Japan Shippers Council (JSC) and Hongkong Shippers council (HKSC). A representative organisation taking-up the issues of all the shippers will become a strong bargaining power.

The multimodal transport is yet in the developmental stage in many countries and the shipper's councils are busy removing the hurdles and increasing the efficiency of multimodal transport. The All India Shippers Council (AISC) formed under the Federation of Indian Chamber of Commerce and Industry (FICCI) draws members from industrial groups and trade councils. Its primary function is to act as an intermediary between the shippers and the Indian Government. The lack of an efficient container service resulting in high costs of transportation forms the main issue for grievances. The council deals with issues relating to ports, air cargo, Maritime law and insurance, shipping services freight rates and container transport that affect multimodal transport.
Trade bodies

In many developing countries large numbers of shippers export the same commodity for example garments, tea, bananas, cocoa, rubber, engineering products, steel products, seafood, etc. in large quantities. These exporters have formed special trade bodies with the intention of taking up common issues affecting the international trade of these commodities. Issues relating to multimodal transport are dealt with under export facilitation measures. Although they fall under the broad category of shippers, with the large volumes of cargo they offer, they form a large bargaining body. Such bodies are the real driving force to trade and multimodal transportation.

The local chambers of Commerce and industrial organisations also have a key role to play in total logistics. A conference "Multimodal transport for economic development" was organised by ICC (International Chamber of Commerce) and the SCICI (Shipping Credit and Investment Company of India) and a decision was made to set up a task force to evolve a co-ordinated plan to promote multimodalism. Such responsive moves by commerce to promote multimodalism are the seeds sown for setting the pace of development.

A vibrant shippers body comprising various industrial houses and trade bodies is better than having a voluminous multimodal legislation. An endeavour should be made to reach quality multimodal service with gainful exchange of experiences on a partnership basis between the transport users and the carriers. Both must realise the value of consultation and co-operation on a long term basis for mutual benefit.
Chapter 2.3.3
ROLE OF FREIGHT FORWARDERS AND MTOS

"The ability to link together several different aspects of logistics is one of the most important skills a global freight forwarding enterprise must have"
(Mr. Lynn C. Fritz, CEO of Freight forwarding and logistics enterprise, Fritz Comp. Inc. USA, ‘Freight forwarder out of passion’, International Transport Journal, 24/95, Page 43)

Freight forwarders played an important role in international transport as a bridge between carriers and shippers. The functions of the forwarders ranged from arranging ocean freight, air freight, door-to-door container transport, overland transport, documentation, customs clearances, warehousing, cargo consolidation to packaging and labelling. With multimodal transport, they have a larger role to play in terms of responsibility and liability.

Their role in developing countries with complex import and export procedures becomes very crucial with larger emphasis on documentation and co-ordination. Although many freight forwarders call themselves MTOs, total logistics is offered by few. They operate contracts in unimodal, segmented and multimodal transport. Such forwarder-MTOs are characterised by the following features:

1. Small time operators.
A common trend seen in many developing countries is that a large number of freight forwarders are a one-man set-up. This makes them financially unreliable for payment
of charges, securities and liabilities. Bangkok is a classic example with 300 freight forwarding agents many with doubtful integrity.

"The industry has been suffering from the One briefcase operators - forwarders who disappear overnight"

(‘Thailand an export Nation’, Lloyds Maritime Asia, March ’95, page 39)

At this rate these new/potential MTOs can hardly offer responsible multimodal transport and have the resources for such large commitments.

2. Cargo consolidation.
The large volume of LCL containers coupled with port-to-port movement of containers makes the cargo consolidation business a very lucrative one. A large number of freight forwarders tend to engage in this business alone and call themselves stuffing/destuffing contractors. In the bargain shippers have to approach many such small specialists which increase the forwarding costs and finishes any hope for multimodal transport.

3. Poor after-sales service
Poor advice to the shippers on the movement and delivery status is very typical feature with the forwarders and MTOs in the developing countries. The picture becomes very pathetic in case of multimodal transport where the forwarder shows little control over any situation. This nicely put by Mr. David Eller in his article entitled “Forwarders choice”.

"However the sales hype and the persuasion of the forwarding sales executive is not always borne out by the reality of the service which is subsequently provided"


4. Lack of experienced personnel.
Many forwarders-turned-MTOs do not have any trained or experienced personnel and the entire activity then becomes a costly learning experience for them and more so for the shippers. Many countries have inducted new regulations on multimodal transportation which include the qualifying criteria requiring evidence of experienced personnel.

The rapid growth in trade has however brought about a change in this picture. These are seen in direct co-operation between the shippers, forwarders and shipping lines and in the realisation by authorities for a need to invite outside investments and expertise in the forwarding business.

1. **Constructive co-operation**

Thai Shippers and freight forwarders are working with shipping lines for extra services to keep with the growing volumes and frequency of shipments.

Multimodal Transporters Association (MTA) is founded in India to study the problems faced by the operators and to examine the proposed amendments to national laws and regulations relating to multimodal transport, to promote multimodal transport and improve the quality of service, shipowners, shipping agents and freight forwarders, trade bodies and government agencies are members.

2. **Foreign forwarders**

Realising the need for strong and globally placed freight forwarders, China has encouraged foreign forwarders. Panalpina world transport, a Swiss Mega forwarder announced setting up offices in Chinese cities of Beijing, Shanghai, Guanzhou and Wuhan. The scope of their activity is limited to liaison and co-ordination. This includes offering value-added services for pre-advice, delivery and pickup data, follow-up, tracing etc., through world-wide computer network and satellite links. Liaison with SINOTRANS, China’s state-owned forwarders, subcontracting trucks, warehouses, ships, aircrafts and customs agents are its other activities.
AMI International, Antwerp a global freight management arm of CMB transport has set up AMI India Logistics Pvt. Ltd with a majority stake. Aimed at strengthening cargo control it has started operations in association with Container Corporation of India (CONCOR) which has 20 CFS in India.

The above examples clearly indicate the trend towards infusion of multimodal expertise and professionalism in the freight forwarding domain.

The freight forwarder is a key link in the multimodal chain. The level of efficiency and co-ordinated effort of the forwarder can make or break this chain. The forwarder must therefore establish a confident line of communication with the shippers and give honest information to shippers. Although the multimodal environment in the developing countries is difficult the forwarders should endeavour to achieve dependability, accessibility, affordability and accountability by emphasising on innovative and inventive services. Only then can they take up total transportation.
Chapter 3.1
REASONS FOR INTEREST IN DEVELOPING COUNTRIES

The Mega Multimodal Transport operators are of two types, those who own vessels and are known as Vessel Owning Mega Multimodal Operators, (VO-MTO) and non-vessel owning Multimodal Transport Operators (NVO-MTO). The large VO-MTO are generally referred to as Mega-carriers. NVO-MTO’s have extensive activity in the area of services but much less in the area of investments in infrastructure. Mega-carriers have made large investments for development of multimodal infrastructure in developing countries.

There are a number of ways in which a Mega-carrier could be defined. One approach is to define a Mega-carrier purely on financial criteria such as assets held or annual revenues earned. The UNCTAD has proposed a hypothetical figure of more than US $ 1 million for qualifying as a Mega-carrier. Another more practical way of defining a Mega-carrier could be on the basis of the size and extent of their activity. A simple approach could be relating to the number of TEU Capacity of its container fleet and the global coverage of these ships. The UNCTAD has suggested a range of 80,000 to 100,000 TEU of total Fleet capacity coupled with a significant presence in the major trade routes of the world as a criteria.

The Mega-carriers came to forefront of container shipping when the sizes of containerships started growing with increase in trade volumes transported through containers. The size of Containerships grew from about 800 TEU Ships to the post Panamax size of over 5000 TEU’s. The increase in size of fleet was due to increase in the volume of the container traffic in the Pacific trade coupled with development of smaller, more fuel efficient and powerful engines having higher cargo capacity. The
larger size fully cellular ships required much more investment as against the conventional multipurpose ships.

This trend in large ships lead to the gradual phasing out of small liner operators to the peripheral tertiary routes. The main arterial liner routes were hence dominated by these Mega-carriers. This fact was evident from an analysis carried out by Containerisation International in September 1993 which showed that 44% of the container slots in service were controlled by the world's largest operators, and nearly 54% of shipboard slots on order were from the top 20 carriers. In 1986 they were controlling less than 35% of the world fleet from the order book. With larger ships exceeding 5000 TEUs being inducted into the world container fleet this trend is likely to continue. Thus the scenario in the coming years is likely to be dominated by these Mega-carriers carrying most of the world's containers.

**TABLE VI**

Mega-carriers on the basis of TEU capacity over 80,000 TEU.

<table>
<thead>
<tr>
<th>SHIPPING LINE</th>
<th>COUNTRY</th>
<th>TEU CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAERSK LINE</td>
<td>DENMARK</td>
<td>185,805</td>
</tr>
<tr>
<td><strong>EVERGREEN / UNIGHLORY</strong></td>
<td>TAIWAN</td>
<td><strong>160,108</strong></td>
</tr>
<tr>
<td>SEA-LAND</td>
<td>U.S.A</td>
<td>153,658</td>
</tr>
<tr>
<td><strong>COSCO</strong></td>
<td>CHINA</td>
<td><strong>146,068</strong></td>
</tr>
<tr>
<td>NYK</td>
<td>JAPAN</td>
<td>123,930</td>
</tr>
<tr>
<td>P&amp;O CONTAINERS</td>
<td>U.K</td>
<td>99,997</td>
</tr>
<tr>
<td>MOL</td>
<td>JAPAN</td>
<td>88,238</td>
</tr>
<tr>
<td>DSR-SENATOR</td>
<td>GERMANY</td>
<td>85,843</td>
</tr>
<tr>
<td><strong>HANJIN SHIPPING</strong></td>
<td>KOREA</td>
<td><strong>85,466</strong></td>
</tr>
<tr>
<td>NEDLOYD LINES</td>
<td>DENMARK</td>
<td>84,651</td>
</tr>
<tr>
<td>K LINES</td>
<td>JAPAN</td>
<td>80,375</td>
</tr>
</tbody>
</table>
It can be seen here that the developing countries (marked in italics) have few Mega-carriers. The profile of the world cellular containership distributed by group of countries is given below in Table VII below.

**TABLE VII**

**Distribution of World Fleet and TEU Capacity of fully cellular containership by Group of countries for 1993.**

<table>
<thead>
<tr>
<th>Flag of Registration by group of countries</th>
<th>No. of Ships</th>
<th>TEU Capacity</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed Market Economies</td>
<td>397</td>
<td>714,088</td>
<td>34.1</td>
</tr>
<tr>
<td>Major Open registry country (including Malta &amp; Vanavatu)</td>
<td>426</td>
<td>599,755</td>
<td>28.7</td>
</tr>
<tr>
<td>Central &amp; East European countries</td>
<td>55</td>
<td>35,343</td>
<td>1.7</td>
</tr>
<tr>
<td>Socialist countries of Asia</td>
<td>73</td>
<td>70,297</td>
<td>3.4</td>
</tr>
<tr>
<td>Developing Countries</td>
<td>292</td>
<td>329,200</td>
<td>15.7</td>
</tr>
<tr>
<td>Other unallocated</td>
<td>180</td>
<td>343,523</td>
<td>16.4</td>
</tr>
<tr>
<td><strong>World Total</strong></td>
<td><strong>1423</strong></td>
<td><strong>2,092,204</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(Source: Lloyds Maritime Information services Ltd. from Review of Maritime Transport 1993,UNCTAD, page 16)

The percentage share of container ships for Developing countries is only 15.7% in terms of TEU capacity. The TEU capacity for Developed Market Economies together with the Open registry (which mainly comprises of developed countries owned tonnage) comes to 62.8%. Hence the participation in movement of containers by developing countries is much smaller.
Even within the developing countries a clear disparity in TEU capacity can be seen from Table VIII given below.

Table VIII

Distribution of Fleet with TEU capacity of fully cellular containerships from developing countries.

<table>
<thead>
<tr>
<th>Flag of Registration within developing countries.</th>
<th>No. of Ships</th>
<th>TEU Capacity</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>3</td>
<td>585</td>
<td>0.18</td>
</tr>
<tr>
<td>America</td>
<td>66</td>
<td>41,282</td>
<td>12.5</td>
</tr>
<tr>
<td>Asia</td>
<td>218</td>
<td>285,495</td>
<td>86.8</td>
</tr>
<tr>
<td>Europe</td>
<td>1</td>
<td>574</td>
<td>0.17</td>
</tr>
<tr>
<td>Oceania</td>
<td>4</td>
<td>1,264</td>
<td>0.38</td>
</tr>
<tr>
<td>Developing countries Total</td>
<td>292</td>
<td>329,200</td>
<td>100</td>
</tr>
</tbody>
</table>

(Source: Lloyds Maritime Information services LTD. from Review of Maritime Transport, 1993, UNCTAD, page 16)

Apart from Asian fleet, the TEU capacity in the rest of the developing world is not of any significant presence on a world scale.

There are a number of reasons for the Mega-carriers to invest in multimodal infrastructure of the developing countries, in general, especially the fast developing economies in particular. These reasons are analysed below.

1. Marketing set-up.

The Liner shipping business has become extremely competitive and the principle trade routes used by the shipping lines are getting very saturated due to surplus tonnage. Container ships as a class, are fairly new and the rate of scrapping of tonnage in this category of ships is virtually non-existent. Older multipurpose vessels with container
carrying capabilities are economically viable on certain niche sectors and are also present in the circuit.

In order to sustain the competition, one of the strategy used by Mega-carriers is to penetrate deeper and wider in an effort to enlarge the market. Higher competition has forced these Mega-carriers to make inroads both ways. Mega-carriers are making marketing efforts at both ends of the trade, i.e. the developed and the developing countries. The infrastructure in the developed countries is in place and keeps up with the needs, while that of the developing countries needs improvement. To achieve harmony of movement both ways the Mega-carriers invest in developing countries. Those Mega-carriers who are able to achieve this harmonious two way movement will be able to handle competition better.

2. Customer demand
Catering to customer demands is very crucial in a competitive market. The Mega-carriers are very attentive to the market behaviour and demands. They have made serious efforts towards investing in and establishing multimodal transport network in a number of developing countries.
For example the US Intermodal operator, Sea-land has bowed to customer demands and enhanced its rail operation between Rotterdam and Moscow as well as starting its services from Novorossiysk to interior points in the Commonwealth of Independent States.

3. Expansion strategy.
As a strategic decision some Mega-carriers expand their activity by acquiring a number of vessels Lloyds List, 28 March, 1994 reports that Evergreen has on order 10,R-class 4,229 TEU Capacity ships and they have to focus on large volume markets in order to find assured cargoes for these new buildings. These Mega-carriers then invest in terminal and other facility to ensure high volume of container
movement to keep up increased volumes in the supply lines for the planned expansion in fleet.

The Container shipping activity is highly capital intensive with faster and larger capacity ships costing around $100 million each. This capital intensive tonnage is the mainstay of the seaborne container trade. This makes it difficult for any operator to enter initially and even more difficult for many Mega-carrier to withdraw after making this large an investment. Due to this high cost of exit there is a tendency to continue being in business and to put all efforts to make the project viable. The struggle for reasonable return on capital makes them tap all sources and methods to secure cargo. This they do by opening new channels for flow of cargoes through investment in infrastructure activities on key routes.

5. Vertical integration.
As a strategy to meet the fierce global competition many Mega-carriers are making investments in terminals and other multimodal infrastructure, to gain control of the land installations and achieve a continuous guaranteed flow of Containers. These investments then become an extension of their actual container transportation activity. By incorporating these shore installations and equipments in their portfolios these carriers vertically integrate their business.

6. Trade-offs
Infrastructural investments made by these carriers are at times used by them as a strategic asset. Interests in such assets are traded-off while forming alliances with other carriers on various trade routes.
7. Liberalisation and globalisation process in Developing Economies.
A number of developing countries have taken steps to liberalise the economies and
globalise their trade. Many of these countries have managed to do this successfully
and results have already started showing up in terms of growth in container trade
volumes. However a number of such developing countries have neither any sizeable
container fleet nor any infrastructure to handle this increased trade. In order to carry
the increased volumes of trade, the required TEU capacity along with required
multimodal infrastructure is provided by many of these Mega multimodal carriers.

8. Increased turnaround.
Timely transport is critical to integrated logistics approach adopted by a number of
Trans-national corporations. One or two legs of these logistics is mostly in the
developing countries due to cost advantages in production. This has made it very
necessary for the modern containerships to ensure fastest turnaround. The delays at a
number of ports in the developing countries due to lack of adequate infrastructure
adversely affect the turnaround time, which these ships can ill afford. In an effort to
increase the overall efficiency and schedules of the ships, investments in infrastructure
bring both short term and long term benefits to the Mega-carrier companies and to
the industry at large.

9. Trend towards Large ships.
In order to meet economies of scale in a competitive market a number of large
Carriers are rushing to operate larger containerships. A list of post panamax
containerships on order is given below.
TABLE IX
Large container ships on order
(as of June 30, 1994)

<table>
<thead>
<tr>
<th>Company</th>
<th>No of ships on order</th>
<th>TEU capacity of each</th>
<th>Total TEUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea-land</td>
<td>3</td>
<td>4000</td>
<td>12,000</td>
</tr>
<tr>
<td>Maersk</td>
<td>4</td>
<td>4000</td>
<td>16,000</td>
</tr>
<tr>
<td>&quot;</td>
<td>6</td>
<td>4800</td>
<td>28,800</td>
</tr>
<tr>
<td>Evergreen</td>
<td>5</td>
<td>4229</td>
<td>21,145</td>
</tr>
<tr>
<td>P&amp;O</td>
<td>3</td>
<td>4038</td>
<td>12,114</td>
</tr>
<tr>
<td>NOL</td>
<td>4</td>
<td>4369</td>
<td>17,476</td>
</tr>
<tr>
<td>&quot;</td>
<td>4</td>
<td>4392</td>
<td>17,568</td>
</tr>
<tr>
<td>HMM</td>
<td>3</td>
<td>4411</td>
<td>13,233</td>
</tr>
<tr>
<td>&quot;</td>
<td>3</td>
<td>4900</td>
<td>14,700</td>
</tr>
<tr>
<td>OOCL</td>
<td>6</td>
<td>4950</td>
<td>29,700</td>
</tr>
<tr>
<td>MOL</td>
<td>5</td>
<td>4800</td>
<td>24,000</td>
</tr>
<tr>
<td>NYK</td>
<td>3</td>
<td>4800</td>
<td>14,400</td>
</tr>
<tr>
<td>Hapag-lloyd</td>
<td>1</td>
<td>4422</td>
<td>4,422</td>
</tr>
<tr>
<td>APL</td>
<td>6</td>
<td>4800</td>
<td>28,800</td>
</tr>
<tr>
<td>Hanjin</td>
<td>2</td>
<td>4970</td>
<td>9,940</td>
</tr>
<tr>
<td>&quot;</td>
<td>5</td>
<td>4024</td>
<td>20,120</td>
</tr>
</tbody>
</table>

(Source: "More and more large containerships, International Transport Journal 34, 1994, page 2615)
As can be seen from the table above 63 new ships from these Mega-carriers, would be trading in the market bringing an additional 293,018 TEUs within the next 2 years. As per the report by Deborah Seyman of Lloyds Shipping Economist (published in International Transport Journal 34,1994, page 2615) a total capacity of some 500,000 would be introduced in the market by 1997. Inspite of the projected average annual growth of 4.8% in containerised transport between 1994-2004 (Review of Maritime Transport 1993, UNCTAD) such an increase in tonnage supply will drive the ships to markets in new developing areas. MTOs will seek to exploit intermodal opportunities, in this manner they could ensure larger cargoes for these voracious ships.

The activity of the Mega-carriers is summed up by Jane RC Joyce, Editorial director of Containerisation International Yearbook 1994.

“For the global operators the challenge is to think globally, but at the same time to act locally, by providing services which are appropriate for local as well as global shipping needs”.


By investing in the developing countries the Mega-carriers have set a trend of mutual co-operation which should be perceived by these countries as an opportunity. The way paved by Multimodal investments must be used to develop the trade at large. Once the trade develops, the gains accruing, can then be used to further develop, expand and consolidate an efficient multimodal system.
Chapter 3.2
INVESTMENTS IN MULTIMODAL NETWORK

The investments made by the Mega-carriers in developing Multimodal Transport Network follows a characteristic pattern. These investments are mainly made in establishing, consolidating and maintaining the basic infrastructural aspects of multimodal transport such as development of container berths, setting up of container terminals and inland clearance depots, expanding or upgrading the existing rail and road haulage network etc. This constitutes the basic phase in the development of the multimodal operation. In most developing countries these facilities are lacking or inadequate and such developments form the first step towards setting up a multimodal network. The Mega-carriers hence work as a catalyst in this process.

Another noticeable feature is that such developments are taking place in the fast-growing developing economies and in those economies which show promise of fast growth. This trend could be compared with betting on the best horse of the race in order to improve odds. This makes perfect commercial sense.

The other salient feature is that these investments are for projects in the nascent stage. This is indicative of the recent nature of such developments.

Most Mega-carriers now realise that constant flow of containers at major hub ports is very essential for the profitability of their operation. In keeping with their need for quick turnaround and seamless flow of cargo they have made investments in order to
ensure a free flow of containers through the entire multimodal pipeline. In addition in order to maintain a balanced movement, they have realised the importance of a good multimodal network on both sides of the container trade.

Although MMTO means both Vessel Owning (VO) and Non Vessel Owning (NVO) MMTO’s the investment made are largely by the VO-MMTO’s. The NVO-MMTO’s in the developed countries mainly operate on one end of the multimodal leg i.e. in their respective countries. NVO-MMTO’s in the developing countries are in the development stage and operate likewise. Very few global NVO-MMTO’s operate on both ends of the axis. Hence actual investments by the NVO-MMTO’s is not a familiar feature.

The multimodal investments made in developing countries by Mega-carriers indicate a wide variations in actual projects depending on the need to that region. A study of these trend are made below.

1. Use of investment as a franchise.
Cosco in a joint venture of COSCO Shanghai (60%) & Cosem of Singapore(40%) have planned an investment for a container depot at Chenjiazai at the port of Shanghai. In addition to servicing COSCO’s own account it will service 3rd party accounts. The obvious advantage to the MMTO is that it will be able to use this outlet as its franchise with priority clearance and movement for their containers. It will also ensure smooth flow of container cargo to their Ships.

2. Co-operation in investment.
At an investment of US $ 1.5 million a joint venture is planned by the Taiwanese MMTO Evergreen with Singamas Container holding of Hongkong for building a container depot at Ningbo. Singmas Container Holding of Hongkong is a Hongkong listed company of Singapore’s Pacific International Lines. This is a case where two
shipping lines, one directly and one through a holding company have co-operated to introduce container depots to ensure movement of containers. This arrangement serves the dual purpose of coping with close competition and raising resources for these allied fields of activity.

In an effort to bring capital infusion & management skills to the port of Vostochny one of Russia's far eastern ports has made agreements for joint operation of the port with Sealand and P & O. As per the agreement the port will take 50 % stake in the joint venture and the balance 50 % would be split between P & O and Sealand.

"P&O commented that they have selected this port due to its location and because it is the only ice-free deepwater port in that region. Sealand, north Asia said that Vostochny a well laidout port and the only viable container port at the movement. Another feature of Vostochny is that its location offers good access to the Trans-Siberian railway".

(Sandra Worthington, "Days of the rednecks" Lloyds Maritime Asia, Dec'94, page 23)

After the development of the port the relay from Vostochny to the border of Western Europe is expected to take 24 hours against the present 3-5 days. Here both the Mega-carriers with independent reasoning for choosing a port for development, have co-operated in this investment mutually.

3. Purchase of existing terminal
Some container carriers have bought stakes at existing terminals to get an edge in the market. While gaining a competitive advantage and access to the facility, the lines have not blocked any funds in the gestation for a project from inception and construction stages. This way they have avoided problems relating to time & cost over-runs associated with projects in developing countries. P&O lines have bought
50% of the Shekhou container terminal in south China and a further acquisition of 51% in the Yangjiagang Win container Terminal on the Yangtze river. Such investments can be considered by these companies as less than a Ship's actual costs and would fetch much more returns in real terms especially when such an investment is located in high traffic lanes.

4. Storage and Repair facilities
Another freight station at Shanghai with storage area, repair and maintenance facilities for containers & trucks at an investment of US $ 10 million is being built by US carrier Sea-Land. These investments in storage and repair facilities are made in order to control and maintain the equipment i.e. container units in developing areas with minimum expense in movement of damaged containers. Many port sites in a number of developing countries are still used for stuffing and stripping of containers and on various occasions it becomes very difficult to track containers delivered inland. Hence such a storage and repair facility proves very useful from the actual operational point of view.

5. Interests in Inland trucking operations.
Some Mega-carriers have also set up their own subsidiary trucking companies through which joint ventures are set up with the intention of developing inland operations. Sealand's Orient Trucking Limited (OTL) has formed a joint venture along with Chinese Guandang Domestic to provide road links and facilitate across the border operations. Forming own trucking companies and improving the inland access indicates the inclination to take under their own control the movement of inland containers. This feature is seen when the local inland haulage does not provide reliable movement as required by these carriers.
6. Investment prompted by trade agreements
US intermodal leader CSX corporation CEO John Snow expects significant growth in trade and transport from NAFTA. They have on plan, a new rail-water services linking eastern Canadian and US ports with Mexican heartland. This project is expected to cost $ 40-60 million, part of which will go for port upgrading in Mexico. In addition the CSX is negotiating with Mexican Rail authorities on arrangements to carry their cargo from Mexican ports into the interior. Such investments stimulated by trade agreements are made in anticipation of growth in trade so that the Mega-carriers become the early birds once the cargo volumes pickup.

7. Investment in electronic system
Japanese MMTO, NYK is known to be in the fore for building a strong multimodal network.

"Under a Corporate Plan called "NYK 21" it aims to become a competitive logistic Mega-carrier able to provide door-to-door rather than merely port-to-port deliveries.... NYK has invested heavily in its multimodal network and in a modern electronic information system to co-ordinate and monitor its cargo movement. ("NYK gains on cross trades",Lloyds List,5 Oct’94 )

The dual investment in infrastructure and information system simultaneously will boost up the volume and efficiency in the door-to-door transport. It is inevitable that in the near future, developing countries will try to integrate their port systems with the information system already used by the Mega-carriers.

8. Investment in Inland clearance Depots
MOL - Mitsui OSK lines have opened an Inland Clearance Depot(ICD) in Thailand which is licensed to engage in both bonded storage and custom clearance for both, export and import. The ICD, Lad Krabang Logistics centre, is located east of
Bangkok and is intended to undertake shipment arrangements, inland transport, inland delivery and container storage. Investments in inland clearance depots with bonded storage and customs clearance is an effort to iron out delays in the movement of the containers.

9. Investment in equipment and infrastructure of Container berths

Development of container berths at certain critical ports have drawn some MMTO's. Sealand and the Port of St. Petersberg have a 50/50 share in investment of equipment and infrastructure for a new container berth. The investment of over 30 million would have the capacity to handle 150,000 containers per year. Such an investment in equipment and infrastructure assists certain fast developing countries to cope with higher volume of containerised trade.

Evergreen’s subsidiary, Uniglory Marine Corporation has made investments plans in port and terminal investments within PRC for upto $30 million. It has also signed a 9 year lease for a dedicated facility at Taichung. In addition, investment in new handling equipment is planned in order to improve the throughput in Taichungs congested public berths.

10. Long term lease agreements

Certain other MMTO’s have made long term lease agreements for container berths with payment of annual lease. One such agreement is made by Maersk Taiwan with Kaohsiung Harbour Bureau to use 2 out of the 7 terminals. An investment of US $70 million is also planned to equip the terminals with 5 gantry cranes, a container freight station and a large container yard. The advantage in such an arrangement is that an exclusive berth is obtained at relatively lower cost over a long period of time.
11. ICDs near industrial Zones

Development of Inland Container Depots at strategic locations like near the industrial zone is also found to be a very cost effective method of consolidation and facilitation of inland transport. OOCL in a joint venture with Shanghai Port Container Development Corporation is working on a 60,000 m² inland container terminal in Shanghai at a cost of US $ 5.7 million with a capacity to handle 120,000 TEU per year. A number of companies want to concentrate on such focal points in order to maximise cargo from the source directly.
Increase in trade of manufactured goods has pushed development of infrastructure in transportation. This development is more pronounced in regions with high growth rate that is Asia and parts of Latin America. Importance to multimodal transport is felt most in countries with large hinterland such as Mexico, China and India, where rapid industrialisation inland, has gone hand in hand with international trade. Multimodal transport in its true sense has not yet arrived in most developing countries. However trade growth has started the process of improving the efficiency of the constituent ingredients of infrastructure and systems required for it. At best, there exists segmented movement of goods, attempting to achieve a seamless characteristic. This could be regarded as process towards multimodalism.

The infrastructure of ports, rail, road and inland centres is not fully adapted to containerised multimodal transportation. Large investment is being made in faster developing countries to keep up transportation systems with the volume of trade flow. Meanwhile, the infrastructures are stretched to their limit. The investments remain fragmented and do not take into account the integrated multimodal picture.

Regarding productivity and technology for multimodal transport, most countries are at cross roads having to deal with abundant unskilled labour on the one hand and highly mechanised capital intensive technology on the other hand. In most cases, the efficiency is the victim.
While funding large infrastructure projects remains a problem, the core problem lies in collective thinking and lack of a project champion for multimodal transport. A case of too many cooks prevails. Mega Multimodal transport operators have made investments to achieve their needs of continuous, speedy and assured flow of containerised cargo. In the bargain, these countries with high growth have benefitted in terms faster and efficient movement of containers. Local private investments though forthcoming, are not well directed.

Governments in most countries continue to be the main players due to the extensive ownership of infrastructure. Their contribution to multimodal transport being largely controlled by the prevailing economic and political environment in the country. Multimodal legislations promulgated, have not yielded substantial results for operational efficiency.

Documentation and procedures are undergoing change, however the process is sluggish. The use of Electronic Data Interchange has not gained full acceptance. Partial systems catering to few segments such as the shipping companies, agents are operational in some countries. A complete community system does not exist.

National shipping lines have a significant presence only in few developing countries such as China, Mexico and India. Multimodal activity in these countries is growing and national shipping companies have a great role to play. Shippers' councils are localised and have narrow vision restricted towards countering increases in freight rates alone. Long term goals and co-operation towards achieving a good multimodal system are found lacking. Most freight forwarders are small-time operators and are not forthcoming to change to multimodal transport operators due to responsibility of large liability and loss of multiple business opportunities.
Multimodal transport is hence not everybody's cup of tea, especially in developing countries. Those countries with both good economic growth and large hinterland industrial area should take it very seriously. Other countries should simply concentrate on improving the efficiency of their trade and transportation systems.

Recommendations

Investment for multimodal transportation is one of the major problem facing most developing countries. Governments should reduce their role in investments but must encourage private sector investments, especially from the shipping interests. These investments should focus on key links between industries and port cities. Clear objectives must be set and measures should be taken to ensure that private sector performs responsibly. Co-operative private sector investments, involving forwarders, shippers' councils should be encouraged wherever large private sectors do not exist. All investments should be preceded by a proper feasibility study and must provide for future growth. Other innovative public and private financing methods for transportation of projects must be encouraged.

In the era of hub ports with ships making fewer port calls, a strategy to develop fewer ports must be adopted. This would increase the feasibility of the port and optimise the use of scarce financial resources. Concerted efforts should be made to increase productivity and efficiency of ports and rail by bringing in skilled management and continuos training of personnel. Special measures must be taken to inculcate multimodal thinking between railways, roads, ports, terminals, ICDs and other shipping interests. This will help in creating an environment for multimodal transportation.

Ports and terminals must perform as independent profit entities and should be allowed to use their funds for development. Rail has proved to be the best option for
multimodal transportation. Wherever these are operated by the government, the authorities must only concentrate on owning and operating tracks. Joint ventures or private sectors should be encouraged to own and operate the freight trains on leased tracks.

Governments should play the role of a mediator to remove hurdles at interfaces and integrate various modes in a single system through the process of consultation and facilitation. Active involvement from trade, that is, users and providers of the service should be bolstered. Trade facilitation committee could be formed to further the cause of multimodal transport and its users. All along, emphasis should be laid on speed management, time management and timing management.

Innovative thinking and continuous efforts to improve the efficiency of such a system must be made by all users and service providers. Building up a co-ordinated and dynamic multimodal system will play an important part in the development of the country as a whole.

The users should pursue simplification of documents, procedures, development and adaptation to a collective community EDI system involving the national communication system.

It must be realised by both the government and the trade that development in multimodal transportation goes together with trade growth. Unless the trade takes the initiative in the development of infrastructure, supportive governments strapped for resources can do very little. The government on the other hand should play the role of a catalyst in creating a favourable environment rather than controlling all trade operations. If both these parties work as partners, development of multimodal transport will be a proximate horizon.
The chemistry of multimodal transport works differently with different ingredients. The formula for multimodalism hence varies from country to country. The success lies in obtaining the proper chemicals and getting the reaction right.

"As far as intermodalism is concerned, every region has to find its own system and its own way"

( Dr. Hans Ludwig Beth, 'Ports and Intermodal Transport, will the US Intermodal experience work outside America?' Brochure on the Port of Hamburg, 1995)
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