

NATIONAL TRANSPORT RESEARCH CENTER 387-0688

LAR

1999

08002

**INTEGRATION OF PORT AND  
INLAND TRANSPORT FACILITIES**

NO.NTRC- 212

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**FEBRUARY, 1999**



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## **CHAPTER-1**

### **EXECUTIVE SUMMARY**



## EXECUTIVE SUMMARY

1. Pakistan has a population of 120.8 million (estimated in 1993) with an area of 804,000 square kilometers. The economic development in our country has resulted in increasing the transportation demand along the major transport corridors of various modes of transport. The transport system in Pakistan, however has not been adequately maintained nor improved to cope with changes in demand due to certain failures in the system.
2. The modern concept of port logistics is that the port is only a transit point for cargo undergoing a modal change and is therefore designed to undertake storage-in-transit (S.I.T) only. The ability of ports to handle given tonnages through their quays will be affected by the Inland Transport Systems which clear or feed these port facilities. In today's world of severe competition delays of a few days can impair the survival chances of a consignee in international market. Therefore, the ports, which are the interface between the sea and land transport, play a vital role in the movement of cargo, both for export and import.
3. In the developing countries of the region there is a growing awareness for efficient transport system at the ports. The marketing approach in international trade competition demands that transport modes be advanced under unified system. The Rail and Road sectors directly influence the port handling performance by minimizing the dwell times and thus avoiding congestion within the port.
4. The existing non-standard transport procedures in our country has resulted in high logistics cost which is attributable to long lead times and wastage of already scarce and meager resources. Consequently the prevailing system and practices are resulting in high overall cost of the exports and imports of the country.

5. It has become imperative for Pakistan to streamline transport procedures rules and legislation relating to transport of goods by rail, road and sea.

**OBJECTIVES OF STUDY:**

1. To identify the problems in inland transport system which causes hindrance in the rapid movement of port traffic.
2. Find out whether present inland transport facilities are capable to meet the minimum requirement.
3. Find out ways and means in present surface transport system for rapid movement of cargo ports.

**REVIEW:**

In this study a review has been made regarding road and railway transport facilities for carrying port traffic. Port facilities of Karachi Port and Port Qasim, pipeline network for carrying liquid cargo, viability of second container terminal at East Wharf of Karachi Port, KICT and QICT to identify the factors which may influence the overall inland distribution of cargoes, the current operating conditions and the potential for improvement. From this review the following findings and recommendations have been made :-

1. The delays in construction of By-passes like Northern By-pass, Southern By-pass and Lyari River and Express-way are contributing towards the congestion of Karachi port and Port city.

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- \* Karachi International Container Terminal (KICT).
  - o Qasim International Container Terminal (QICT).

**FINDINGS:**

1. The infrastructure of oil pier OP-1 (recently renamed as OP-2) has become out dated which could collapse if not repaired.
2. After the construction of OP-V in year 1995 some pipelines like edible oil have not been used due to their defective positions.
3. The draft limitation at Karachi Port may pose problems to the newly built Karachi International container Terminal (KICT) in attracting mother vessels.
4. The fourth generation vessels require draft limit to be 11.5 to 12 meters but the draft limitation of Karachi Port is not more than 10.5 meters. This factor would pose problems in attracting such vessels.
5. There is the lack of basic infrastructural facilities at Port Qasim and at QICT like Limited storage space, lack of covered sheds, improper working of Custom Freight Stations (CFS). These inadequate facilities are causing inordinate delays in the export shipments resulting in losses to Export Sector.
6. Delay in re-stuffing of goods at Qasim International Container Terminal (QICT) has been reported as the container handling has not been allowed to shipping lines and goods are handled by Port Authorities only.
7. The KICT at Karachi Port West Wharf and QICT at Port Qasim are facing reduced traffic due to limited container traffic of Pakistan.

8. The delay in the construction of berths No.6 to 9 at East Wharf of Karachi Port for five years has resulted financial and operational losses to KPT to tune of about Rs.1.5 billion and loss to National Economy of about Rs. 4 billion.
9. The viability of second container terminal at East wharf has been minimized after launch of Karachi International Container Terminal (KICT).
10. Qasim International Container Terminal (QICT) may suffer loss in business as one of the Consortium calling at its terminal is facing disintegration due to selling of one line and quitting of another.
11. Port authorities have not computerized container control and tracking system.
12. At Port Qasim the utilization percentage for cargo handling equipment has been found the 17% for mobile cranes, 60% for fork lift trucks, 19% for towing units and 21% for trailers.
13. Most of the marine craft is in need of ongoing routine maintenance low availability has caused delays in shipping.
14. Working hours at Port of Karachi for movement of cargo are based on a day work system with regular overtime where as liquid bulks are worked on a 24 hours a day basis.

15. A significant proportion of import cargo moving from Sea port to other dry ports are not on through B/L. Many of the shipping lines are unwilling to issue such B/L because of the liability involved.
16. There is shortage of road vehicles suitable for carrying containers.
17. At present the maximum legal length of articulated vehicles is 14.0 meters where as for movement of 40 feet containers, length of 15.5 meters is required.
18. The share of port traffic transported by road taken by private trucking is some 95% NLC accounts for about 5% of the freight ton Kms by road.
19. Approximately 1200 trucks to/from the Super Highway mainly use route 1, in order to enter the port area. These vehicles tend to congregate along the Mauripur Road with peak arrival time of 0200-800 hours for checking in for orders prior to entering.
20. There is also congestion in the day time as trucks park up ready to leave at 1900-2000 hours as the city traffic diminishes.
21. There are often long queues of tankers with around 2000 tanker trucks entering and leaving the port each day.
22. Estimated daily oil tankers movement to and from port of Karachi is 2000 where as daily truck movement is 10,000.

23. Average rate of increase in the number of trucks on road has been around 9% per annum.
24. 60% of total oil traffic (11.3 million tonnes) is being transported by road.
25. Only NLC trucks are allowed to travel on routes 4 and 5 during day time where as private trucks are not allowed to use this route in day time.
26. Many of roads in the port city (i.e. Karachi) suffer severe congestion at peak hours the problem is exacerbated by the poor condition and encroachments on the road reducing the effective road width.
27. The freight carried by railway is largely limited to Government controlled cargoes and the private sector does not regard Railways as a viable option.
28. The freight wagons of Pakistan Railways (PR) have outlined their economic life and are poorly maintained. 17.1% on average have been found unserviceable.
29. There is shortage of specialized wagons particularly for containers and availability is a restriction on capacity.
30. As there are no proper container wagons so flat beds are being utilized for carrying containers. As a result, flat beds are in heavy demand but there is a surplus of covered wagons for general cargo.



31. The shortage of wagons is to the extent that there are currently only 235 bogie wagons in circulation which are suitable for carrying containers.
32. The slow turn around of wagons at ports and the long transit times have been the major factors causing the poor wagon utilization.
33. There is the problem of damaged wagons being taken out of trains during a transit which remains lost within the system. This causes delays on large export shipments where several containers are covered by one letter of credit and therefore none of the shipment can proceed until the whole shipment is available.
34. There has been a policy of providing a limited service to a high number of destinations instead of good service to a limited number of destinations.
35. The rail system in its present form is not suitable for the large scale movement of container traffic due to limited resources in terms of facilities, conflicting priorities and poor control systems.
36. Pakistan Railway are unable to offer a reliable dedicated block train service for container movement, despite the demand for such services.
37. Delays of upto 15 days awaiting a wagon with further delays due to transit marshaling procedures for movement of port traffic has been observed.
38. Pakistan Railway are unable to sustain the enhanced service levels with daily container trains.

39. Due to the current poor service reliability of P.R. the customers are nervous about entrusting their shipment through railway, as they risk heavy container demurrage payments on delayed units.
40. The deterioration of market share of P.R occurred in part due to rapidly overaging of assets, as a result of inadequate investment.
41. It has been estimated that 50% of the assets of the entire railway system have crossed their economic life.

**RECOMMENDATIONS:**

1. Improve procedures rules and legislation relating the transportation of import/export cargo.
2. Improve operational efficiency by introducing consolidating trucking, bulk shipments, and coordination among organizations like port authority, custom authority etc.
3. Introduce international practices based on standard documents and procedures.
4. Coordination body should be established at the Federal Level and also at the Provincial Level for Coordinating, Planning and Developments in the transport sector. This body should have adequate powers to integrate all policies and plans for road rail and other modes of transport.

5. There should be coordination and harmonization for making plans for highway and rail network development.
6. A strategy should be developed for construction of limited access roads to the port city keeping in view that existing rights on roads through port city suffer from encroachment and mixed traffic use seriously limits the capacity of roads even when dualized.
7. Develop off port storage for empty containers and dispute/unclaimed cargoes.
8. Construct inland container depots.
9. Provide an export container Freight Station (CFS) Facility.
10. Authorize more bonded road carriers without route restrictions.

#### **TRANSPORTATION OF LIQUID CARGO**

11. The Refurbishment of oil pier OP-I (renamed as OP-2) may be made by improving the haphazardly laid 35 oil pipe lines and provision of loading area.
12. The oil pier OP-V needs to be upgraded with additional facilities such as common user pipe lines for edible oil, molasses and chemicals, etc.

13. For handling edible oils and molasses the loading platform of the OP-V be extended to about one meter from outer face of breasting dolphins. This will enable laying of ship to shore hoses, handling of hoses by ship derrick and placing gangways for access between ship and shore.
14. The weldolets on manifolds for pipe No. 12, 13, 14, 16, 18 and 20 of oil pier OP-V which are not in use or cannot be used may be cut away and openings should be closed so that pockets are to be eliminated.
15. For handling chemicals at OP-V at-least three additional pipelines should be laid to handle over a dozen types of chemicals from jetty head to the shore manifold.
16. The existing position of headers (at OP-V) having numerous downward openings be reversed in upward position, pipelines leading to the terminal should be hooked-up with the headers via removable spool pieces.

CHAPTER-2

ROAD ACCESS AND ROAD TRANSPORT FACILITIES FOR  
CARRYING PORT TRAFFIC



1. **ROAD ACCESS TO THE PORT OF KARACHI:**

Road access to the port is via the road network of the city of Karachi. The city suffers from severe congestion on virtually all the routes to the port.

Road access to the main port areas is via designated Port Gates. These are as follows :

0	East Wharf	2 import and export, 1 import and 1 export;
0	West Wharf	1 import and export, 2 import;
0	Keamari Groyne	1 import and export, 1 import.

Currently if road vehicles need to travel from the East Wharf to the West Wharf or the Keamari Groyne, they have to exist the port area and use the public roads. There is a bridge connecting the East and West Wharves but it has fallen into disrepair.

There are five main truck routes to/from the port of Karachi and comprise the following :-

- Route 1 Port - Mauripur Road - Shahr-i-Pakistan - Super highway (N-5) - or after site Road RCD Highway (N-25).
- Route 2 Port Keamari Oil Terminal - Shrine Jinnah Colony - Sunset Boulevard - Korangi Industrial Area - National Highway.
- Route 3 Port - Shrine Jinnah Colony - Sunset Boulevard - Shahr-e-Quaideen - University Road - Rashid Minhas Shaheed Road-Super Highway (N-5).
- Route 4 Port - MT Khan Road - Shahr-i-Faisal - National Highway.

- Route 5 Port - MT Khan Road - Sharah-i-Faisal Rashid Minhas Road-Super Highway (N-5).

Route 1,4 and 5 all meet at the road system adjacent to the KPT building and a road building programme is underway to alleviate the congestion created by this confluence.

Only NLC trucks are allowed to travel on routes 4 and 5 during the day. In the evening restrictions are lifted except for the Sharah-i-Faisal.

2. **NORTHERN BYPASS:**

Construction of a 68 kilometer Karachi Northern By-pass(KNB) which is extremely necessary to ease traffic congestion is still under planning stage. This by-pass would effectively link the port with the super Highway by passing the congested city areas.

3. **SOUTHERN BYPASS:**

The proposed route of the Southern By-pass is from Quaidabad to Keamari after passing through Defence, Sunset Boulevard, Shakra-i-Roomi, Shakra-i-Jami and Mai Kolachi By-pass. This by-pass is necessary for linking the Port and the Keamari Groyne area with the National Highway via Korangi. The Western Section of this by-pass has been constructed but the alignment of the Eastern Section has not been resolved due to objections from local residents and Defence Housing Authority. At present K.M.C has decided to abandon the Southern By-pass Project pending for several years due to a dispute between KMC and DHA. The DHA has objection to the proposed alignment (route) and they are not ready to allow the KMC for including Shakra-i-Roomi and Shakra-i-Jami in the proposed route.



The Southern by-pass project conceived in the KDA Master Plan, has been in the doldrum from 1990 following the construction of the Quaidabad Bridge.

4. **LYARI RIVER EXPRESSWAY:**

Lyari River Expressway. This would follow the Lyari river and would link the port to the Super Highway. There have been disagreements between the Karachi Mass transport programme, the Provincial Government of Sindh and the KMC as to the most appropriate layout of this project. KMC have invited tenders for a scheme for a road constructed at ground level on both banks of the river, based on BOO basis. Doubts have been expressed however as to whether it will be possible to removed the large number of illegal settlements which currently occupy this route;

The above schemes have been promoted by various Government bodies, but there has in the past been no overall coordinated plan. For example it is not clear whether both the Northern By-pass and Lyari River Expressway are required, and if not which scheme would be more appropriate. All the major schemes above are proposed to be offered to the private sector. However to date there have been no such private road schemes in Karachi. There is therefore some doubt as to how successful they will be in attracting serious bids, and as a result if and when these projects will be completed.

5. **CONTRIBUTION OF MAURIPUR ROAD TOWARDS PORT TRAFFIC CONGESTION:**

Traffic on main Mauripur Road has been chaotic due to truck parking on both sides of road. Although the truck stands from Mauripur Road are being shifted to new site on Main Hawkesbag Road. But still there is need to raise the status of Mauripur Road to that of National Highway and to connect it with Super Highway via GULBAI round about and Shershah Road. There is also need for widening of railway crossing at GULBAI.

6. **NATIONAL LOGISTIC CELL**

Pakistan's road haulage industry consists of two distinct parts, the National Logistic Cell (NLC) and the private sector. The NLC was established on 6th August, 1978 and the logistic resources of the army were placed at its disposal until its own organization set up was established.

NLC has a fleet of 1574 dry cargo trucks capable of carrying 48,175 tones approximately at any one time. It also has a fleet of 371 tankers with a capacity of 11.8 million liters of liquid cargo. In terms of absolute load, its share is less than 10% but it is an important carrier by virtue of its role as a coordination agency and its position as the largest road transportation agency in the country.

By law, NLC specializes in the transport of fertilizer, wheat, rice, cotton, crude oil and finished POL products. However NLC is also engaged in carrying other cargoes including containers.

NLC has its own support organization to keep the fleet and its equipment in operational readiness. It has modern repair and base overhaul workshop facilities located at Karachi and Gujranwala. Staging section have also been organized to carry out repairs and recovery on route at Sawan, Lahore, Sahiwal, Bahawalpur, Khairpur and Hyderabad. Vehicle availability is about 85%.

7. **ROAD HAULAGE FLEET IN PRIVATE SECTOR:**

The number of trucks on the road in Pakistan grew from 52,000 in 1985 to some 109,000 in 1993, at an average rate of 9% per annum. The 1990 NTRC O-D Survey

indicated the heaviest truck traffic between Karachi-Hyderabad, with daily volumes of up to 10,000.

The road haulage fleet is being supplemented by an increased number of smaller delivery vehicles. Delivery vans, enumerated within the category of wagons, station and delivery vans, and grew at annual rate 12.5% over the same period, from some 74,000 in 1985 to some 189,000 in 1993.

#### **8. VEHICLE CHARACTERISTICS:**

At the time of the Roadside Interview survey carried out by NTRC in 1986, the mean age of the truck fleet was estimated at 9 years. A mean expected life of 12.5 years was calculated for Bedford Trucks. Private operators often increase vehicle capacity by chassis modifications. The present weight regulations need to be reassessed. The legal maximum single axle load is 9.6 tones at present on a 2-axle truck but the limit is mostly ignored in practice.

The maximum legal length of articulated vehicles currently 14.0 m, should probably be increased to 15.5 m, with special permission being obtained for movement of large loads such as 40 ft containers.

Freight vehicles are used intensively: surveys have found that vehicle running time accounts for 40% of available time and that with loading and unloading, vehicles are in active use for nearly 12 hours each day. Vehicles are also intensively at night: the most active running period is between 4.00 pm. and 2.00 am.

For other trucks the annual utilization is less. The JICA Study assumed 75,000 km per annum for all 2 axle trucks. The average utilization of the NLC fleet is rather low - about 65,000 kms per annum. Vehicles are overhauled at 150,000 km and are replaced

after 300,000 km depending upon condition. Load factors reflect the incidence of empty running to port city Karachi. For all truck trips the average trip length is about 350 kms.

9. **ORGANIZATION AND OWNERSHIP OF PRIVATE TRUCKING:**

The transport task by road transport in 1992-93 was some 37 billion ton km. The share taken by private trucking is some 95%, about 35,000 billion ton km of cargo. NLC accounts for about 5% of the freight ton-km by road.

Trucking is dominated by a large number of individual owners operating mainly small Bedford trucks on a "hire and reward" basis. There are few privately owned multi axle trucks, but the on-going shift to medium capacity vehicles follows the natural evolution of a virtually unregulated competitive industry.

There is a high level of efficiency in both the organizational behavior and market structure. The industry is supported by many small-scale competitive freight agents. Truckers usually obtained their loads from the forwarders who provide the interface between the shippers and the operators. Forwarders usually own their warehouses and trucks and they run their businesses on a family basis with partners or contractors in other cities.

10. **PRESENT RULES AND REGULATIONS RELATED TO ROAD HAULAGE:**

In Pakistan there is little Government regulation of trucking, Broadly, there are no restrictions on operations and few if any serious obstacles to entry. The trucking industry is largely in the hands of the private sector with small firms and owner-operators abounding. Trucking has been unregulated since the 1960's and there is complete freedom as to routes, the types of vehicles used for different cargoes and tariff setting.

Formal regulations include vehicle registration and annual license fees, route permits and vehicle weight limitations. Trucks have to be registered and pay an annual license fee in one of the Provinces. Each Province has its own specific registration policies and trucks are usually registered in Provinces with more liberal policies. Thus more trucks are registered in Sindh or Baluchistan than in the Punjab which has more rigid policies. Trucks are required to obtain a route permit from a Provincial Regional Transport Authority. Prior to 1960 this was used to regulate truck operations. Permits are now issued freely on application and are valid throughout the country.

Provincial vehicle weight limitations follow those from the Punjab which specify the unladen and laden weights and axle weights that must not exceed their registered values. Limitations are not enforced. Overloading is common with most vehicles loaded between 70-100% above their authorized allowance. The existence of vehicle weight and other regulations provide the basis for a well established but informal system of payments by truckers to the Police. Payments can amount to as much as Rs.500-3,000 per round trip between Karachi and Rawalpindi. There is a tendency to register goods vehicles as a public carrier so that they can be combined for own account work and for hire and reward.

#### **11. POLICIES OF ROAD HAULAGE:**

Two specific proposals were formulated within the eight plan as follows :-

- (i) NLC is to be managed primarily as a commercial organization completely at par with the private sector in all matters such as payment of duties, taxes and user charges. NLC should also compete freely with the private sector in relation to the freight tariffs charged. NLC should be suitably compensated in terms of negotiated tariffs where they are used exclusively in the public interest. All other non freight related activities, such as

manufacture of vehicles and road construction, should be undertaken through a subsidiary of NLC, with totally separate accounts and administration.

- (ii) The use of larger trucks and trailers is to be encouraged for intercity movement, in order to reduce transportation costs and to minimize damage to the road system.

However, whilst promulgating a policy of increase private sector investment in Road Haulage; it has not been mentioned any specific measures that would be taken to enable the financing of these purchases.

12. **LACK OF FINANCIAL RESOURCES FOR FINANCING OF FREIGHT TRUCKS:**

The major problem faced by road transport subsector companies is a lack of financial resources, legislation was passed in 1991 declaring road transport an industry. The objective was allow commercial bank loans for acquisition of vehicles using the vehicle itself as collateral.

Many companies have a pressing need to replace obsolete and worn-out equipment. Over the next five years, at least 10,000 trucks will need to be purchased each year. At the moment, companies cannot finance these investments from retained earnings, since access to credit is still difficult. Foreign investors, who might be interested in larger scale trucking companies, have in the past been reluctant to share in joint ventures, as the investment climate has stayed unfavorable.

**13. STRUCTURAL CHARACTERISTICS OF FREIGHT COMPANIES:**

The main structural characteristics of freight companies are :-

- (i) absence of or only small amounts of, assets in stocks;
- (ii) little or no long-term fixed assets, tangible or intangible, the former representing the value of fixed installations (buildings, garages; and the later principally the value of the clients; and
- (iii) high or very high levels of medium term production assets, which are composed of the companies vehicles.

**14. FINANCING NEEDS FOR ROAD HAULAGE:**

The finance needs for road haulage world-wide may be summed up as follows :-

- (i) Road transport companies have little need for long term financing. These needs decrease inproportion to the size of the company; the smaller the company the less the need for long-term finance;
- (ii) They do have a great need for medium term financing, say from 3 to 7 years (80% of fixed assets); and

- (iii) They have short-term financing needs, cash needs of less than one year but which are dependent on good relations with clients and suppliers and their own resources and profitability.

**15. BOTTLE NECKS IN THE FINANCING SYSTEM FOR PRIVATE TRUCK OPERATORS:**

Provision of medium term financing is the deciding factor in the modernization of trucking in Pakistan. In the west there are three main forms of financing i.e. bank credits, leasing and renting. Most truckers in Pakistan do not have access to bank financing for the purchase of vehicles. Pakistan has a fairly unique system of financing vehicles, due to the social structure of trucking and banking requirements which do not accept the vehicle as collateral for loans.

About 40% of owner operators come from tribal Areas where prosecution for financial or legal offenses is virtually impossible. As a result, banks and insurance companies do not lend or write policies for truck operators from Tribal Areas.

The Banking Council in Karachi estimated that about 30% of truck operators use bank financing, but bank financing requires capital in fixed assets or a guarantee from somebody who has adequate collateral.

Most operators cannot fulfill these conditions and a "parallel" market for vehicle financing has developed whereby an investor(s) who qualify for bank financing purchase a new vehicle, which is then resold to the truck operator at interest rates often as much as 50% per annum. Thus bank credits are generally not available for truckers in Pakistan and renting is not yet established.



16. **POSSIBILITY FOR INTRODUCING THE LEASING SYSTEM FOR FREIGHT TRUCKS:**

In the West, if private financing of transport infrastructure has had limited success, the opposite may be said of equipment leasing. International equipment leasing has grown very fast in recent years. All modes of transport have embraced leasing finance, and major fleet renewals are now financed through leasing companies. Leasing is very well adapted to the road transport industry. Most vehicle manufacturers in the West have subsidiary leasing companies in order to promote their vehicles. The duration of lease contracts is determined according to fiscal depreciation regulations and is generally 3-5 years for commercial vehicles and 5 years for trailers/semi-trailers. Leasing is however more expensive than bank credits.

Leasing advantages are attributed to :-

- (i) tax benefits to leasing companies can lower costs;
- (ii) the equipment is made available on flexible payment terms most suited to the user's needs;
- (iii) lumpy capital costs are converted into variable current costs thereby freeing the user's equity capital for other purposes;
- (iv) leasing spreads the capital risks, since equipment is highly mobile and can be redeployed to another user if the first lessee finds an unanticipated decline in demand; and
- (v) greater transparency of costs further facilitates efficient asset management.

**17. NEED OF MULTI-MODAL SYSTEMS:**

The use of larger multi-axle truck-trailers or truck-trailer combinations (with low axle loading) would give savings both in terms of per ton-km costs, and less pavement damaged would result.

There has been a strong growth of the use of containers over recent years, and this system is the most important form of intermodal transport in Pakistan. Other forms of intermodal transport have been developed in various subsectors of the freight transport market in the West, including:

- (i) swapbodies, or interchangeable body system, where the truck body is lifted off the chassis, transport by rail, to the destination, and placed on another truck chassis for final delivery. This technology does not differ significantly from the container system;
- (ii) bimodal trailers, or road-railer system, where the bodies which from the chassis for road transport are exchanged in the rail terminal by rail bodies. The road railers are then formed into a train and transported like wagons to the destination, from where they continue traveling as normal road trucks after exchanging the bogies;
- (iii) kangaroo or "piggyback" system, where both trucks and trailers are transported by rail. Transfer operations are normally effected horizontally;

**18. ROAD TRANSPORT LEGISLATION**

Road transport is regulated principally under the 1965 Motor Vehicles Ordinance ("the Act") with amendments, which provides for the establishment of

Provincial and regional Transport Authorities to administer the provisions of the Act. The Motor Vehicle Rules were issued in 1969. The main provisions of the Act relate to:

- (i) licensing of drivers;
- (ii) the registration of motor vehicles;
- (iii) the control of transport vehicles;
- (iv) the road transport corporations;
- (v) the regulation of construction equipment and maintenance of motor vehicles;
- (vi) the regulation and control of traffic; and
- (vii) the setting of penalties for violation of motor vehicle rules and regulations.

The existing legislation does not meet present requirements it was comprehensively rewritten in 1990, however, and a new Motor Vehicle act should be promulgated as soon as possible.

**19. RULES FOR REGISTRATION OF VARIOUS FREIGHT VEHICLES:**

There is a tendency to register goods vehicles as public carriers so that they can be combined for both own account work and for hire and reward.

Within Article 75 and 78 of the 1965 Act the Government can set for the use of heavy vehicles, including load limitations. Some specific limitation for certain roads and

bridges exist. "There is no clear policy enforced which cover the relationship between the actual pavement strength and the actual axle loads. A number of proposals have been made to limit (admissible) axle loads, but no clear decision has been taken and consequently axle load limitations are hardly enforced".

M/s Hass Consult has advised a "gradual increase from the 9.6 ton per axle to the international standard of 12 ton/axle. This would prepare Pakistan for its future role as a road transit country for inter-regional long distance road transport to/from Afghanistan and CIS".

No inter instrument of a regulatory or conventional nature limits the driving and rest times of drivers, as reported in "An analysis of Road Freight Time and Distance Operating Statistics", undertaken by TRRL/NTRC.

There appear to be no Multilateral Agreement in operation, such as the TIR Convention and others. The parties to the TIR agreement benefit from the facility to which it accords:

- (i) Free circulation in transit of vehicles transporting bonded goods so long as the vehicles in question meet conditions guaranteeing their inviolability (seals) and the transporter individually liable for payment of customs duties on the goods is guaranteed by a recognized international association.
- (ii) International transport of dangerous substances by road.

20. **FINANCING FOR PRIVATE FREIGHT TRANSPORTERS:**

Most truckers prefer higher capacity vehicles for the longer hauls and the availability of finance to make the purchase is probably the main determinant of whether

Pakistan will be able to upgrade and modernize its trucking fleet.

A special investment Fund should be set up of the transport sector, target toward small and medium size truck companies. Credit would be allocated to firms that can provide the basic element of a Business Plan and an Investment Plan. This investment Fund could be financed or co-financial by foreign donors (the ADB, the World Bank, bilateral donors, UNDP etc).

It should be complemented by the formation of a Mutual Guarantee Fund, that will be financed from a percentage of interest charges paid back to the Investment Fund. The rate of interest charged should be close to the market rate and the length of loans adapted to the net cash flow generated by this investment. Commercial banks should be associated as soon as possible with the scheme, in order to allow them to take over the lending process at the end of the project.

## **21. CO-ORDINATION AND HARMONIZATION ISSUES:**

Plans for highway and rail network development should be coordinated. Each mode has a role to play in land transport. From an economic and environmental view point, it is likely that a significant part of the present long distance truck traffic moving between Karachi and the North should be undertaken by an improved rail service. For instance, rail's share of total cargo traffic fell by 9% over the years 1992-98. Based on an average trip length of 792 km and vehicle load of 25 tones, approximately 1,000 extra trucks a day are needed to compensate for the railway's lost share of cargo traffic.

The five year plans provide basic guidelines but there should be a Transport Sector Plan, and an allocation of budgets and resources based on economic feasibility and cost benefit analysis. Projects that are complementary, such a multi-modal projects, should be

given a higher ranking. The National transport Study is expected to set down some guidelines for the relative roles of future road and rail investment in Pakistan, by public and private sectors but it seems unlikely that it will deal with this subject in the depth that is required.

It is recommended that a coordinating body is established at the Federal level, and perhaps also at Provincial level. The agency would be responsible for coordinating and planning developments in the transport sector, it would have adequate powers to integrate all policies and plans for road, rail and the modes of transport, including data collection, project appraisals and other studies, research, training, etc. These functions may be best achieved by building on the strengths of the existing National Transport Research Centre organization rather than by create a new body.

There is a growing movement to adopt common technical safety and environmental standards. Where these involve costly adjustments they may only be achieved over time. Standard forms of documentation adapted for EDI, combined with modern telecommunications will more freely facilitate international trade and would yield high economic returns.

**CHAPTER - 3**

**RAILWAY TRANSPORT FACILITIES  
FOR CARRYING PORT TRAFFIC**





**1. PRESENT INFRASTRUCTURE OF RAILWAY:**

Pakistan Railways is in a vicious circle of decline, as a result of high costs and poor service on the one hand and lack of investment on the other.

The existing Pakistan Railways network is shown in Chart No.2 PR had a total of 8,774 km of route, comprising 12,625 km of track, at the end of 1997. Table No.3(1) gives a breakdown of the total length of route and also of track by gauge. Apart from the line from Karachi to Lodhran, it is nearly all single track.

**BREAKDOWN OF ROUTE AND TRACK LENGTH BY GAUGE**

<b>TRACK</b>	<b>ROUTE KILOMETER</b>	<b>TRACK KILOMETER</b>
BROAD GAUGE	7,718	11,344
METER GAUGE	445	555
NARROW GAUGE	611	726
<b>TOTAL</b>	<b>8,774</b>	<b>12,625</b>

Source: P.R.

The section from Lahore to Khanewal, some 286 km, is electrified; of the rest only 8 km is electrified.

New track has not been laid since 1982. Since 1991 PR has been closing narrow and many broad gauge branch lines on uneconomical routes and the removal of tracks from branch/unremunerative lines is under process.

The track is generally reported to be in relatively poor condition due to lack of maintenance, reducing the maximum permitted speeds. A programme of upgrading the track is currently being implemented. Apart from a few minor bottlenecks, it is reported that the lack of double tracks is not a problem with regard to capacity, though it does again reduce average speeds.

PR has three type of locomotives, electric, diesel electric and steam. Steam locomotives have been gradually replaced with diesel electric locomotives as the motive power is modernized. In 1994, PR had 204 units in this range, of which typically some 26% were not available for service. The locomotives are generally out dated and beyond the end of their useful life with availability a serious constraint on capacity.

2. **RAIL TRACK AND MARSHALING YARDS WITHIN THE PORT AND ITS UTILIZATION:**

Rail service at Karachi Port is available to both the east and West wharves with 260 Kms of track within the port area. It is estimated that 10-12 trains per day leave port of Karachi.

There are two main marshaling yards within the port, M.I yard on the west wharf covering 11.7 hectares and on the East wharf to the rear of berths 8-17 covering 22.8 hectares. These two yards alone represent approximately 16% of the total area of the wharves. Their central location represents a constraint to efficient working within the port, particularly with regard to container handling. It has been noted that these two yards are under utilized and are being used for storage of empty wagons, specially covered units. It is estimated that at least 50% of these yards may be surplus to requirements.

There are marshaling difficulties within the port due to shortage of locomotives, which can affect the direct discharge of cargo from the vessel to the wagon.

3. **STATUS OF FREIGHT WAGONS, SPECIALIZED WAGONS FOR CARRYING PORT TRAFFIC:**

The wagon fleet of P.R on 30th June, 1996 consisted 14,569 covered wagons, 6100 open wagons, 4442 special wagons for carriage of liquids explosives, machinery etc and 774 departmental wagons.

Many of the wagons are beyond their economic life and are poorly maintained. 17.1% on average were unserviceable. This compares with figures ranging between 4.0 and 9.2% for the years from 1950 to 1990, indicating that there has been a significant deterioration in the last five years.

There is a shortage of specialized wagons, particularly for containers, and availability is a restriction on capacity; indeed PR has no proper container wagons and therefore has to utilize flat beds. As a result flat beds are in heavy demand but there is a surplus of covered wagons for general cargo.

Pakistan Railway has not invested in specialized wagons to carry containers. Remedial action has been made by utilizing the open wagons to accommodate two TEU per wagon and use conventional wire lashings to secure the units. Pakistan Railway have insufficient open wagons to satisfy the demand for movement of containers to/from the hinterland. There is need for additional rail wagons capable of carrying containers, either specialized wagons with twist locks or more open-top wagons. The shortage of wagons is to the extent that there are currently only 235 bogie wagons in circulation which are suitable for carrying containers.

It is possible that private interests may invest in wagons, particularly as part of the port development project, but a condition would be expected to be that the wagons are retained in sets and on a specific route, i.e. in a closed loop operation.

#### 4. POOR WAGON UTILIZATION:

Goods train does not have priority on the rail system and container trains tend to be slotted in when the line is not required by passengers, grain or oil trains. This leads to delayed entry to sections of track. The slow turn round of wagons at ports and the long

transit times have been the major factors causing the poor wagon utilization. There is also the problem of damaged wagon being taken out of trains during a transit and remaining lost within the system. This causes delays on large export shipments where several containers are covered by one letter of credit and therefore none of the shipment can proceed until the whole shipment is available.

5. **NEED OF CONTAINER BLOCK TRAIN SYSTEM AND ROUTE CONCENTRATION STRATEGY:**

There is need for operation of container block train system. These should be operated on the basis of a scheduled daily time table. The benefits of fixed rail transport scheduling are route prioritization and service reliability. The advantages of block train scheduling are that it keeps wagon sets together, thus avoiding the necessity to find individual wagons to make up each train load and provides a fixed daily capacity plan. Each block train should consist of the maximum 35 wagon set.

Pakistan Railway is already facing the resources problems. In order to provide a good service to a limited number of destinations the policy of ROUTE CONCENTRATION STRATEGY should be adopted. The present of providing a limited service to a high number of destinations should be avoided in th benefit of Railway. The service level is seen as the key factor in Pakistan Railway's loss of market penetration.

6. **UN-RELIABLE SERVICE OF RAILWAY BY COMPARING WITH ROAD TRANSPORT:**

The rail system in its present form is not suitable for the large scale movement of container traffic. This is due to limited resources in terms of facilities, conflicting priorities and poor control systems. These factors result in rail being unable to meet the potential demand and providing inadequate customs service levels. As container traffic has grown, rail has gradually lost market share. Pakistan Railway are unable to offer a

reliable dedicated 'block' train service for container movement, despite the demand for such services. There can be delays of upto 15 days awaiting a wagon with further delays due to transit marshaling procedures, especially for movements to and from the dry ports. Despite improvements achieved in 1993. Pakistan Railways were unable to sustain the enhanced service levels with daily trains. The current poor service reliability means that customers are nervous about entrusting their shipments to Pakistan Railway, particularly as they risk heavy container demurrage payments on delayed units.

At present special arrangements are required to be made by Railways to upgrade its facilities. Marketing department of Pakistan Railway must come forward to provide the needs of exporters and importers. Necessary arrangement for infrastructure provisions should be made to provide one window operation.

The factors which has let to transfers of rail traffic to road has been control reliability. With container traffic by road, the shipper arranges to have the goods placed on a truck at one end of the inland distribution "pipeline". The vehicle only has his container and if it fails to arrive on time he contacts the transport company. They tend to have good information on why the truck is late and where the truck and the cargo is located. The problem with rail system is that it is bulk handling mode and therefore unit control is more difficult. A shipper places his container with PR to enter the "pipeline" but in the event of delay it is often difficult to locate. Container shippers are prepared to pay more for reliability and control.

7. **ISSUES OF RAIL FREIGHT TRANSPORT:**

The issues regarding rail freight transport are as follows :-

1. Non scheduled operation which is caused by the lack of locomotives.
2. Delays due to priority given to passenger trains (there is no remedy for this issue).
3. Large number of accidents due to overaging and poor performance of freight wagons. The incidents of derailed freight trains comes in the range of 3040% range every year which are extremely high. This has seriously damaged customers faith in railway freight transport.
4. Lack of tractive power to handle sections with steep gradients.
5. In sufficient train speeds.

Main causes of speed restrictions are :

- (a) Poor condition of rail.
  - (b) Poor condition of sleepers.
  - (c) Shortage of ballast.
  - (d) Overaging of bridges.
  - (e) Poor condition of road beds.
6. The issue regarding the tracks and other structures is that their durable periods have passed in various sections.

7. Over manning resulting in high operating costs with the reduction in freight traffic and the change from steam locomotives to diesel the number of people required to run the railway would have been expected to be substantially reduced, however this is not fully reflected in the number employed.
8. A lack of commercial customer oriented management.

8. **DEFICIENCIES AND PLAN ALLOCATION FOR RAILWAY:**

The Pakistan Railways, which carried 73% of freight traffic during the First Five Year Plan period (1955-60), had its share reduced to mere share reduced to mere 20% of freight traffic by the end of the Seventh Five Year Plan.

PR's freight traffic is largely limited to government controlled cargo and the private sector does not regard PR as a viable option. Indeed it has been opined that the freight services could collapse within five years.

This deterioration of the market share of the Pakistan Railways occurred in part due to rapidly overaging of assets, as a result of inadequate investment. The amount of investment is defined in the Government of Pakistan's National Five Year Plans, which are summarized in Table.

This shows that the share of railway investment in the National Plan has decreased markedly from 10.7% in the Second Plan (1960-65) to a mere 2.4% in the Seventh Plan. Though an amount of Rs.27.9 billion was recommended by the sub-working group for

investment in the railway sector in the seventh five year plan, provision of only Rs.8.85 billion was made, and the actual expenditure was only Rs.5.68 billion. Such inadequate investment has adversely affected the transport capacity. At present, it has been estimated that 50% of the assets of the entire system have crossed their economic life.

9. **IMPROVEMENTS REQUIRED FOR GETTING BETTER FACILITIES IN RAILWAY:**

1. Operation of regular through trains.
2. Expansions of container transport.
3. Improvement of freight handling equipment.
4. Raising the performance of rolling stock.
5. Revamping of the maintenance system/facilities.
6. Rehabilitation and improvement of the existing infrastructure to increase capacity.
7. Operational losses to be minimized by closing unremunerative lines where strategic and other considerations permit, fare rationalization and reduction of staff. Improvement of overall efficiency through better management and operational techniques;
8. A flexible policy for freight rates, whereby they could be varied according to the type of commodity and the routes;
9. Allocation of traffic between rail and road to be made according to suitability, i.e. long haul for rail and short haul for road. The Railways and NLC to coordinate their activities and, wherever possible to go into joint venture infrastructure project;



10. Goods traffic which is more profitable to be accorded priority in locomotive power and importance over passenger services particularly on branch lines;

10. **IMPROVING OF FREIGHT HANDLING CAPACITY:**

Container transport is tending to increase year by year and is predicted to become a major source of revenue for P.R in the future according to demand forecasts the number of containers handling at port for this year 1997-98 is expected to exceed 100,000 TEUs. There is presently a shortage of freight cars and locomotives and due to long transport time, only one container train per week runs between Karachi and Lahore. If reductions in the turn around time for freight trains can be achieved handling time, at container yards by contracting out container handling and reducing the waiting time etc. the daily freight handling.



**CHAPTER - 4**

**PORT FACILITIES FOR FLOW  
OF FREIGHT TRAFFIC**



1. **KARACHI INTERNATIONAL CONTAINER TERMINAL (KICT):**

The KICT has recently started in the month of November, 1998. The terminal area has a yard area of 11.43 hectares (ha), wharf area of 1.22 ha, entrance gate area of 0.22 ha and queuing area of 0.73 ha.

The terminal is located at berths No.22, 23, 24 and 24-A of west wharf of Karachi Port. The project is joint venture between American President Lines and International Container Terminal Services Inc. Manila. At present it is providing services to American President Lines (APL) and Neptune Orient Lines (NOL) only.

There are three dock side gantry cranes, six Rubber Tyre Gantrys (RTG's), two top lifts, two empty handlers, 18 tractors, 3 generators of one mega watt each, 40 chassis, 4 fork lifters, 6 service vehicles, one each of water truck, fuel truck, communications system, computer system and office equipment. The initial capacity of KICT would be 300,000 twenty foot equivalent units (TEU's) while in the second phase it would be handling 450,000 TEUs. The terminal will have a storage capacity of 8567 TEU's.

The KICT will pay a lease rent of Rs.39.776 million per year to the KPT at the rate of Rs.292 per square meter in the first year which would go upto Rs.45.742 million in the second and third year. It will also pay a royalty of Rs.21.950 million or \$4 million per year which will go up to Rs.33.250 million in the second year and Rs.46.080 million in the third year.

2. **VIABILITY OF SECOND CONTAINER TERMINAL AT KARACHI PORT:**

KPT has invited tenders for the finance, design, construction, operation, management, maintenance and transfer of another container terminal to be located at berths 6 to 9 at East Wharf. Bids has been submitted on April 23, 1998. Nine Parties have been prequalified to bid for the project.

The viability of this second container terminal has been minimized after launch of KICT. Despite spending considerable amount on reconstruction of berths from Number 6 to 9, the KPT is facing difficulties in attracting parties who were sceptical about the viability of the Project.

After the start of QICT majority of shipping lines had gone to Port Qasim where draft is deeper than the KPT's 6 to 9 berths. Although the KPT has assured traffic of 450,000 TEU's to KICT but for the proposed second container terminal KPT is not ready to give any guarantee or assurance for traffic.

The KICT at Karachi Port West Wharf and QICT at Port Qasim are facing reduced traffic, low rates and limited container traffic of Pakistan. More over the exports as well as imports are becoming expensive in view of the decision of shipping lines to accept freight charges only on free on board (F.O.B) basis instead of C&F after they were disallowed to remit freight earnings from Pakistan.

In this back drop the use of berths from 6 to 9 at East Wharf may be useful for multi-purpose where not only containers but general Cargo could also be handled.

3. **DESIGN DEFECT IN THE QUAY WALL STRUCTURE OF KARACHI PORT:**

During 1955 to 1963 the berths No.5 to No.17 were reconstructed but due to inherent design defect in the quay wall structure heavy settlement started on apron of berths No.5 to 8 immediately after its reconstruction during 1958. Despite carrying out heavy re-medial measures the settlement did not reduced.

Now the berths No.5 to 10 are again under-reconstruction (for second time) and these are scheduled to be completed in early 1999. Presently the draft of the berth measures 9.5 meters but work is on to deepen it to 13 meters. After completion of this reconstruction job the KPT intends to invite private sector to build a container terminal on berths No.6 to 9.

The delay in construction of berths for five years has resulted financial and operational losses to KPT to tune of about Rs.1.5 billion and loss to National Economy of about Rs.4 billion.

4. **NEED FOR REFURBISHMENT OF OIL PIER AT KARACHI PORT:**

The Oil Pier which was originally called as OP-1 and recently renamed as OP-2 was constructed decades ago and with the passage of time its condition has been deteriorated.

The need for piers renovation was being felt for long as the import of Petroleum Products was increasing every year and pier was unable to cope with the work load. The infrastructure of the pier became outdated which could collapse if not repaired.

After the refurbishment the existing facilities would be improved which includes haphazardly laid 35 oil pipe lines and provision of loading area. The existing capacity of the pier would be increased by 5 Million tonnes from 3.5 Million tonnes to 8 Million tonnes. The other two piers OP-1 and OP-3 have a capacity of 8 Million tonnes each. After renovation the pier will be able to house vessels of 75,000 dead-weight tonnes (DWT) against the present 35,000 DWT.

There is need of modern liquid cargo handling facility including fully balanced marine loading arms, adequate piping system and electrically operated gate valves for handling all type of liquid cargoes as it is predicted that the liquid cargo traffic at Karachi Port will reach to 19 Million metric tonnes by the year 2000.

5. **PROBLEMS IN THE PIPELINE NETWORK OF OIL PIER OP-V:**

During the designing of OP-V Port users were not consulted, in the result OP-V is facing difficulties for transportation of liquid cargo. Now even after construction of OP-V in year 1995 some pipelines like edible oil have not been used due to their defective positions. It would be preferable if the edible/non-edible oils and tallow pipelines system is modified by 10 inch dia pipe line to enable OP-V to connect the same through bend to permit single stage direct pigging from loading platform to individual user terminals.

The oil pier OP-V needs to be upgraded with a view to providing additional facilities such as common user pipelines for edible oil, molasses and chemicals. For handling edible oils and molasses the loading platform of the pier be extended to about one meter from outer face of breasting dolphins. This will enable laying of ship to shore hoses, handling of hoses by ship derrick and placing gangways for access between ship and shore.



The weldolets on manifolds for pipe No.12, 13, 14, 16, 18 and 20 which are not in use or can not be used may be cut away and openings should be closed by shaped steel plates so that pockets are to be eliminated.

The complete isolation of existing 8-inch stainless steel pipeline PP-8, 9 and 10 be made from each other so that no interconnection be made between these pipelines. At present pressure relief valves exists at loading platform or any other inter-connection.

For handling chemicals at OP-V at least three additional pipelines should be laid to handle over a dozen types of chemicals from jetty head to the shore manifold. At present 2-3 chemicals are being handled which comprise Moro Ethylene Glycol (MEG) Methyl Tertiary Butlyether (MTBE), Ethyl Hexagonal, Methanol, Lube base oil, Hexane etc. The pipe lines can be laid in alleviated position of about one Meter in height on the existing track.

The pipe inter-connection via smaller dia pipe lines at jetty head should be plugged and each pipeline be an independent while T connection for pigging line should be blinded by blind flanges and straight line connection be made.

The use of removable pig launchers may be introduced at jetty heads to enable to launch the pig. The pipe lines leading to the first pigging stage should be extended through smaller dia pipelines to the overhead header to ensure removal of cargo during pigging.

The existing position of headers having numerous down ward openings be reversed in upward position, pipelines leading to the terminal should be hooked up with the headers via removable spoul pieces.

6. **PROBLEMS IN THE KARACHI INTERNATIONAL CONTAINER TERMINAL (KICT):**

The draft limitation at the Karachi Port may pose problems to the newly built state of the art Karachi International Container Terminal in attracting mother vessels. As the fourth generation vessels require draft limit to be 11.5 to 12 meters but the draft limitation of the Karachi Port is not more than 10.5 meters. This factor would pose problems in attracting such vessels.

KPT should concentrate on dredging of the channels and increasing the draft limit to make KICT at Par with QICT.

7. **CONTAINER TRAFFIC BEING HANDLED BY KICT AND QICT FOR YEAR 1998:**

The total container traffic of the country for year 1998 has remained around 550,000 twenty foot equivalent units (TEUS) of which the QICT was handling 200,000 TEU'S, KICT was handling around 150,000 TEUS while the remaining volume of containers was scattered and was being handled at East and West wharves.

The container traffic is projected to increase by at least 1.75% due to containerization of dry cargo from 75% to 85%. It is estimated that container traffic would go up to 750,000 TEUS by the year 2007.

8. **QASIM INTERNATIONAL CONTAINER TERMINAL(QICT):**

QICT is situated at berths 5,6 and 7 at Port Muhammad Bin Qasim. The total area of terminal is 240,000 sq. meters. The terminal has a Sea. Frontage of 600 metres berth

length with a width of 400 metres. The facility is equipped with four ships to shore quay gantry cranes of 38, 40 and 100 tonnes lifting capacity supported by ground handling consisting of five Rubber-Tyred Gantries (RTGs) 4 Reach stickers, Internal transport vehicles and fork lifts.

The container storage area has a capacity of 8000 TEUs at any one time while handling is undertaken by Rubber Tyread Gantry (RTGs) cranes running on fixed strips.

9. **QICT FACING DISINTEGRATION BY EPIC CONSORTIUM:**

The QICT may suffer loss in business as one of the consortium calling at its terminal is facing disintegration due to selling of one line and quitting of another.

At present three shipping consortia are calling at QICT, the first one (EPIC) Europe, Pakistan, India consortium calls on Sunday at 0800 hours and leaves at 1200 hours on Tuesday. The second MAERSK and SEALAND brings vessels on Tuesday at 1200 hours and occupies QICT berth till 1500 hours of Thursday while the third line calls from 1500 hours of Thursday to 1500 hours of Saturday.

The EPIC consortium comprises six lines - CMB, CONTSHIP, CMA, P & S, ANS ALLERMAN AND DSR. The consortium was likely to disintegrate as one of member Lines - CMB - was being put on sale while DSR had decided to quit EPIC and joined MIX lines from December 31, 1998 and would be operating under MIX from December 31, 1998 indirect service along with UAS.

CMB line is one of the major line which is calling at the QICT and its sale will be a serious blow to the consortium as three giant lines Maersk, P&O and Neptune Orient Lines (NOL) have shown interest in purchasing the South African Marine Group which owns the CMB.

If the CMB is taken over by NOL which apart from NOL comprises American President Lines (APL) the line would then start calling at Karachi International Container Terminal (KICT). But if MAERSK takes over CMB then it would join the consortium of MAERSK and Sealant which is calling at Qasim International Container Terminal (QICT). In this case, CMB may not shift from QICT its shift from one consortium to another will break the EPIC consortium.

The quitting of CMB and DSR would mean reduction in two ships as each line was contributing minimum of one ship and this in turn would force other lines to increase their slots.

The dismantling of the consortium would mean that remaining four lines would either start bringing feeder vessels or would stop calling at QICT and prefer Karachi Port where feeder vessels could easily be handled by mobile cranes of PMS.

#### **10. LPG HANDLING FACILITY AT PORT QASIM**

Under the present system at the Port Qasim, LPG has been handled where ships used to discharge LPG at Berth No.1 marginal Wharf through boozier from where the gas is transported to the storage tanks of walk gas.

The PQA has handled 0.03 million tonne of LPG in 1996-97 against corresponding period of 1995-1996 when it imported 0.05 million tonne, since September, 1980 to June, 1997, the PQA has handled 0.18 million tonne of LPG.

There is need of LPG in cold areas of country. The product is used by FON Gas, walk Gas and Burshane Gas etc. In order to cater to the needs of the LPG in the country. Particularly in the northern Part, the oil Marketing firm which is also in the consortium of establishing a dedicated LPG terminal at Port Qasim had decided to transport the product through Railway. The consortium is called TERMCO which comprise oil marketing firms such as SHELL, SHV, ENERGY, LIFE LINE which would build storage facilities at port Qasim while from the port onwards the product would be transported through locomotives.

The transportation part would not be the responsibility of the TERMCO rather another group of companies with SHV Energy would form a consortium to transport the LPG.

The Fauji Oil Terminal (FOTCO) is going to have a liquefied Petroleum Gas (LPG) facility. This FOTCO facility would be used by a Consortium TERMCO comprising SHV Energy, Shell etc.

The additional pipeline with storage farms would be built in the initial Phase at the existing jetty while a new jetty would be constructed simultaneously adjacent to it which would cost around \$ 12 million to \$ 15 million.

Handling the LPG at the existing jetty would greatly lower the tariff of handling LPG which will facilitate the consumer. But as soon as the throughput reaches 250,000 tonne, the LPG would then be handled at the second jetty.

**11. INADEQUATE FACILITIES AT PORT QASIM:**

Delay in re-stuffing of goods at QICT has been reported as the container handling has not been allowed to shipping lines and goods are handled by Port Authorities only. There is the lack of basic infrastructural facilities like limited storage space, lack of covered sheds, improper working of customs freight stations (CFS) and labour problems are being faced at Port Qasim and Qasim International Container Terminal (QICT). There inadequate facilities are causing inordinate delays in the export shipments resulting in logges to export sector.

**12. WORKING HOURS AT KARACHI PORT:**

Hours of work for containers, general cargo and dry bulks were based on a day work system with regular overtime. Liquid bulks are worked on a 24 hour a day basis. Reception, delivery and gate-house operations are carried out on a one shift system with overtime, but it is planned to increase this to a 24 hours a day operation. This is currently awaiting Customs approval.

**HOURS OF WORK**

<b>NORMAL HOURS</b>	<b>OVERTIME HOURS</b>
0730 - 1130 & 1230 - 1630	1630 - 1830
1900 - 2300 & 2330 - 0330	0330 - 0630

Note: Fridays and Public Holidays work the same hours, but at extra cost.

**13. STORAGE FACILITIES AT THE PORT OF KARACHI:**

<b>LOCATION</b>	<b>TYPE OF STORAGE OR USE</b>	<b>AREA HECTARES</b>
EAST WHARF	Working area adjacent to the wharf edge	7.9
	Transit sheds	5.2
	Open storage immediately behind wharf area	7.8
	Leased (primarily open) storage	16.8
	Napier Mole Berth used for dangerous cargo	13.1
	Rail Yard	22.8
	Roadways	15.9
	Buildings, gates	3.6
	<b>TOTAL</b>	<b>93.1</b>
WEST WHARF	Working area adjacent to th wharf edge	8.7
	Transit sheds	6.3
	Open storage immediately behind wharf area	4.4
	Leased (primarily open) storage	17.6
	Rail Yard (M.I. Yard)	11.7
	Roadways	14.0
	Buildings, gates	2.7
	<b>TOTAL</b>	<b>65.4</b>
KEAMARI GROYNE	Transit sheds (CFS)	1.1
	Leased (Open) storage	5.4
	Roads, gates, building etc.	9.9
	<b>TOTAL</b>	<b>16.4</b>

Source: TAMS Report.

There are bulk liquid storage tanks in the Keamari Oil Installation Area, which are owned by the KPT and leased out to some 17 companies. These are used both for storing imports direct from the vessel and also for storing products after they have been refined. Tank capacity is summarized in Table.

**14. TANK CAPACITY AT KEAMARI GROUYNE**

<b>COMMODITY</b>	<b>USE</b>	<b>CAPACITY (TONS)</b>
Petroleum	Crude	172,000
	POL products with refineries	103,000
	POL products with Oil Companies	321,000
Non Petroleum Tankage	Molasses	425,000
	Edible Oils	195,000
	Miscellaneous Liquids	21,000
	<b>TOTAL</b>	<b>1,237,000</b>

Source: TAMS Report.

It is reported that the Military Authorities are unwilling to permit the construction of any more tank storage capacity at Keamari Groyne.



**15. CONDITION OF QUAY SIDE AND MOBILE CRANES AT KARACHI PORT AND AT PORT QASIM:**

MAKE	YEAR	NUMBER	SWL TONES	LOCATION	CONDITION
Krupp Arbelt	1957	2	2	B.1	C
Krupp Arbelt	1957	1	2	B.1	C Written off
Krupp Arbelt	1957	3	2	B.2	C
Krupp Arbelt	1957	2	2	B.3	C Written off
Krupp Arbelt	1957		2	B.3	C
Krupp Arbelt	1957	3	2	B.4	C
CMI	1971	5	2	B.8	B
CMI	1971	1	2	B.8	C Beyond economic repair.
Krupp Arbelt	1957	4	2	B.10	C
Krupp Arbelt	1957	1	2	B.10	C Written Off
Krupp Arbelt	1957	4	2	B.11	C Written Off
Krupp Arbelt	1957	3	2	B.11	C
Krupp Arbelt	1957	1	2	B.14	C Written Off
Krupp Arbelt	1957	1	2	B.14	C
Krupp Arbelt	1957	2	2	B.15	C
Krupp Arbelt	1957	1	2	B.15	C Written Off
Krupp Arbelt	1957	2	2	B.16	C
Krupp Arbelt	1957	1	2	B.16	C Written Off
Krupp Arbelt	1957	2	2	B.18	C
S & P	1964	4	2	B.19	B
CMI	1971	4	2	B.20	B
CMI	1971	1	2	B.20	C Beyond economic repair.
CMI	1971	4	2	B.21	B
CMI	1971	1	2	B.21	C Beyond economic repair.
CMI	1971	5	2	B.22	B
CMI	1971	3	2	B.23	B
CMI	1971	2	2	B.23	C Beyond economic repair.
Applevage	1961	1	20	B.18 A	C
Booms	1983	1	40	JB.25	B
Krupp Arbelt	1957	4	2	JB.27	C
Krupp Arbelt	1957	1	2	JB.28	C

Note: All cranes, with the exception of the Booms cranes, have had their SWL's reduced for safety reasons.

(Contd.) **MOBILE CRANES AT KARACHI PORT**

MAKE	KPT REFERENCE NUMBER	YEAR	NUMBER	SWL* TONES	CONDITION
Neal	22,23	1962	2	25	C Written off
Jones	24,25	1968	2	3	C
Jones	26	1979	1	3	C
Jones	27,28,30	1968	3	3	C Written off
Jones	29,31 to 39	1968	10	3	C
Jones	40 to 45	1974	6	3	C
Jones	46 to 54	1975	9	3	C
Coles	55 to 57	1976	3	6	C
Nellen	58 to 71	1977	14	10	C
Jones	72 to 85	1979	14	3	C

Note: All Jones cranes have had their SWL's reduced for safety reasons.

(Contd.) **MOBILE CRANES AT PORT QASIM**

Make	Model	Year	Number	SWL Tones	Condition
Jones	851 M	1975	1	35	C Beyond economic repair.
Jones	565 C	1977	1	30	B
Jones	565 HBL	1976	2	8	B
Jones	971 HBL	1980	1	24	C Beyond economic repair
Jones	971 HBL	1980	1	24	B
Jones	971 HBL	1986	2	24	B
Jones	571 M	1986	2	32	B
Atlas	Truck	1977	2	2	C

16. CONDITION OF FORK LIFT TRUCKS, SHUNTERS, TOWING UNITS TRAILERS AT KARACHI PORT AND AT PORT QASIM:

(a) FORK LIFT TRUCKS AT KARACHI PORT

Make	KPT Reference Number	Year	Number	SWL* Tones	Condition
Balkancer	453 to 457, 462, 463, 466	-	8	8	C
Balkancer	518, 519	1976	2	5	C
Balkancer	520,529,532	1976	3	5	C Beyond economic repair
Balkancer	471, 476, 480, 517, 531	1979	5	5	C Beyond economic repair
Balkancer	481, 483	1979	2	5	C
Balkancer	-	1979	10	5	C Beyond economic repair
Balkancer	514, 516, 521 to 523, 525, 528, 530, 533	1981	11	5	C Beyond economic repair
Balkancer	-	-	1	5	C Beyond economic repair

(b) Contd FORK LIFT TRUCKS AT PORT QASIM

Make	Year	Number	SWL Tones	Condition
Climax DA-10	1978	4	9	B
Hyster	1986	1	4	C
Hyster	1986	14	4	B
Climax DA-70	1978	1	3.5	C Beyond economic repair
Climax DA-70	1978	15	3.5	B
Climax DA-70	1978	13	3.5	C
Balkancer	1977	5	3.2	C Beyond economic repair.

(c) Contd. SHUNTERS AT KARACHI PORT

Make	Year	Number	Condition
Muirhill	1972	3	C
Muirhill	1973	1	C Beyond economic repair.
Muirhill	1974	2	C Beyond economic repair.
Muirhill	1974	1	C
Ford	1979	2	C

(d) Contd. TOWING UNITS AT KARACHI PORT

Make	Year	Number	Condition
Balkancar	1972/76/78	77	C Beyond economic repair.
Balkancar	1972/76/78	7	C

(e) Contd. TOWING UNITS AT PORT QASIM

Make	Year	Number in Fleet	Condition
Douglas	1980/81	22	B
Other	1976	15	C Beyond economic repair.

(f) Contd. TRAILER AT KARACHI PORT

Capacity	Year	Number	Condition
3 tone	1980/83	334	C Beyond economic repair.
3 tone	1980/83	15	C
5 tone	1980/84	56	C Beyond economic repair.
5 tone	1980/84	12	C

(g) Contd. TRAILER AT PORT QASIM

Capacity	Year	Number in Fleet	Condition
20 T	1978	73	B

17. **MARINE CRAFT AND PILLAGE FACILITIES AT KARACHI PORT:**

KPT has a fleet of 6 ships handling tugs and 2 pilot boats, as well as large number of other harbour craft. Of the 6 tugs listed, 2 are modern Vorth Schneider propulsion (VSP) craft with bollard pulls of 35 tones, whilst 2 are older twin screws craft with a bollard pull of 26 tones. The remaining 2 are not in current use. The 2 VSP craft are much preferred by pilot due to their good maneuverability and high bollard pull.

Low availability of marine craft has caused delays to shipping in the past, so agreements have been reached with the Navy, Coast Guard, Karachi Dock Yard and the private sector to make suitable craft available when the KPT tugs and pilot boats are out of service. 2 tugs complete with crews are currently being supplied by the Navy.

Inbound vessels are boarded half a mile south of the fairway Buoy and is not considered difficult. However, care has to be exercised, particularly in the monsoon season when swell can make boarding hazardous and on occasions vessels have to be lead into more sheltered waters before the pilot can board. Pilots normally disembark from out bound vessels in the sheltered waters off Manora Point.

Normal practice is for inbound vessels to dock on the ebb, with outbound vessels using the flood, thus allowing vessels to maintain steerage way at slow speed. On arrival, tugs are taken.

18. **TUGS PILOT BOATS, FLOATING CRANES MISCELLANEOUS CRAFT DREDGERS, HOPPER BARGES AT KARACHI PORT:**

KPT owns and operates a large fleet of harbour craft, many of which have reached the end of their normal operating life. There are many problems with maintaining these craft. Most are in need of on-going routine maintenance. Any craft out of service for either breakdown or overhaul is likely to be unavailable for a lengthy period.

The tables below list KPT harbour craft, together with basic information, and an estimate of their condition. Each craft has been allocated one of the 3 condition codes as follows :-

- (A) This craft is in reasonably good condition and only requires on-going routine maintenance.
- (B) This craft is currently operational, but requires repair as well as on-going routine maintenance.
- (C) This craft is in poor condition. It may be operational, but should be phased out, and if operationally required, replaced.

(i) **TUGS AT KARACHI PORT**

Name	Year	HP	Bollard Pull Tones	Condition
Sindbad	1986	2 x 1,565	35	A
Shandawar	1986	2 x 1,565	35	B Waiting spares
Sohrab	1983	2 x 1,100	26	B
Bahadur	1978	2 x 1,100	26	B
Purjosh	1962	2 x 750	19	C
Firdousi(VIP)	1959	1,500	18	B
Tawana	1970	320	3.5	Under repair.
Chabuk	1970	320	3.5	B
Tanomand	1960	265	3	B
Zorawar	1960	265	3	C

(ii) **PILOT BOATS AT KARACHI PORT**

Name	Year	HP	Speed, Knots	Condition
Amna	1986	2 x 750	13	B
Asma	1986	2 x 750	13	B
Shansea	1962	2 x 325	8	C

(iii) **FLOATING CRANES AT KARACHI PORT**

Name	Year	HP	SWL TONES	Condition
Hathi	1966	2 x 670	100 *	B Survey required
Peeltan	1964	2 x 450	60	B Survey required

Note: FC Hathi has had SWL reduced for safety reasons.

(iv) MISCELLANEOUS CRAFT AT KARACHI PORT

Name	Type	Year	HP	Condition
Surkhab	Ferry	1965	2 x 128	C
Seekhpar	Ferry	1966	2 x 128	C
Saqqa	Water Boat	1963	300	C
Sabil	Fire Float	1973	2 x 650	C
Sea Elephant	Anchor Boat	1959	250	A
Sherdil	Anchor Boat	1968	320	C
Janbaz	Cargo Barge	1969	320	A

(v) DREDGERS AT KARACHI PORT

Name	Type	Year	Capacity	Condition
Aftab	Bucket	1994	3 1,250 m/hr	A
Izhar	Bucket	1995	1,250 t/hr	C-Sunk
Fateh	Bucket	1965	1,250 t/hr	Under repair
Karamat	Cutter Suction	1969	3 4,750 m/hr	B
Aminuddin	Grab Hopper	1969	1,000 t/hr	A
Rajhans	Trailing Suction	1965	700 t/hr	Repair halted
Mahmud-ul Hasan	Trailing Suction	1980	3 2,000 m/hr	A

(vi) HOPPER BARGES AT KARACHI PORT

Name	Year	Speed Knots	Capacity	Condition
Whimbrel	1959	9	800 tones	C
Curlew	1959	9	800 tones	C
Kulung	1966	9.5	800 tones	B
Saras	1972	9.5	1,000 tones	B
Neelsar	1972	9.5	1,000 tones	Under repair



**19 (a). BERTH AND STORAGE FACILITIES AT PORT QASIM**

Wharf	Berth	Length m	Design Dredged Depth m CD	Maximum Vessel Draught m	Current use
Multi purpose	1	200	- 11.0	9.5	Liquids
	2	200	- 11.0	10.0	General bag
	3	200	- 11.0	10.0	General bag
	4	200	- 11.0	10.0	General bag
	5	200	- 12.0	10.5	Dry Bulk
	6	200	- 12.0	10.5	Dry Bulk
	7	200	- 12.0	11.0	Dry Bulk
Iron Ore Coal		278	- 12.8	12.0	Steel Mill
Fauji Oil Terminal				12.0	Fuel Oil

Source: PQA.

**(b) STORAGE FACILITIES AT THE PORT QASIM**

Location	Transit Sheds Sq.M	Open Storage Sq.M
Marginal Wharves	20,000	270,000
Terminal Areas	0	257,600
Total	20,000	527,000

Source: PQA.

**20. ROAD AND RAIL ACCESS TO THE PORT QASIM:**

Road access to the Port Qasim is by way of two lane single carriageway road, some 12 kms long, from the National Highway. From this Highway there is a route joining the Super Highway to the north which provides the main route upcountry.

Rail access to the Port Qasim is by way of a single track super from the main railway line.

Both the road and rail routes have adequate capacity for current needs.

**21. AVAILABILITY AND UTILIZATION OF CARGO HANDLING EQUIPMENT AT PORT QASIM**

Equipment Type	Availability Percentage	Utilization Percentage
Mobile cranes	67%	17%
Fork lift trucks	60%	60%
Towing units	92%	19%
Trailers	98%	21%

**22. CONDITION OF MISCELLANEOUS CRAFT, MARINE CRAFT, PILOT BOATS, & BUOY TENDERS AT PORT QASIM**

**(a) MISCELLANEOUS CRAFT AT PORT QASIM**

Name	Type	Year	HP	Condition
Jatli	Survey Launch	1981	2 x 350	B
Sadaf	Survey Launch	1980	124	B
A. Paima	Survey Launch	1988	2 x 336	B Spare required.
Seema	Survey Launch	1986	90	B
Isaro	Inspection Launch	1977	2 x 368	B
Hoori	Mooring Boat	1978	163	B
Noori	Mooring Boat	1978	163	B
Amber	Work Boat	1980	2 x 100	B
Anjum	Work Boat	1980	2 x 100	B
Haleji	Water Barge	1978	180	B
Keti	Grab Barge	1987	-	B
Wari	Hopper Barge	1987	-	B Spare required.
Jhari	Hopper Barge	1987	-	B

**(b) CONDITION OF MARINE CRAFT AT PORT QASIM**

Name	Year	HP	Bollard Pull Tones	Condition
Kadiro	1977	2 x 1,760	42	B
Gharo	1977	2 x 1,760	42	B Dry docking over due
Chara	1998	2 x 1,760	42	B Dry docking over due
Sohna	1979	2 x 495	-	B
Mohna	1979	2 x 495	-	B

(c) PILOT BOATS AT PORT QASIM

Name	Year	HP	Speed Knots	Condition
Yaqoot	1978	2 x 400	12	B Dry docking over due
Lahoot	1978	2 x 400	12	B

(d) BUOY TENDER AT PORT QASIM

Name	Year	HP	Speed Knots	Condition
Mazdoor	1978	2 x 800	10	B

23. **BIBLIOGRAPHIC REFERENCES**

1. ALMEC Corporation Pacific Consultants International February 1995. The study on National Transport Plan in the Islamic Republic of Pakistan.
2. Posford Duvivier Consulting Engineers U.K, November 1995. National Ports Master Plan and Management Study Pakistan.
3. Daily Dawn Karachi dated December 7, 1998 Article How to Modernize the Private Truck Operating System(Written by MAHMOOD LARIK).
4. Pakistan Observer Islamabad dated February 14, 1999 Article Private Trucking System needs to be modernized(Written by MAHMOOD LARIK).
5. Daily Dawn Karachi dated January 11, 1999 Article inadequate Infrastructure and Transport Facilities at Karachi Port(Written by MAHMOOD LARIK).
6. Study of NTRC (No.196) on Survey of the Time Taken for Flow of Cargo through Port.