CHAPTER – II

INDIAN AND GLOBAL MARITIME AND CHEMICAL INDUSTRY SCENARIO

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01 MARITIME AND CHEMICAL INDUSTRY SCENARIO

1.1 India – A Maritime Nation – A Snap Shot

1 The largest democracy in the world.

2 The second largest market in the world.

3. The third largest country of technically and professionally qualified manpower in the world

4. The fourth largest economy in the world in terms of purchasing power parity.

5 The sixth largest industrialized country in the world

6 The seventh largest country in the world in the land area.

7. A coastline of about 7517 km (including the coastlines of Andaman, Nicobar and Lakshdweep Islands). Indian coast is about 5560 km.

8. 12 Major ports and one corporatised port.

9 185 Minor and intermediate ports.

10 Indian Chemical Industry is the 12th largest in the world and the 3rd largest in Asia. [01]

11. India is one of the top four Asian Foreign Direct Investment Destinations and among top 10 destinations as developing economy. [02]

1.2 Introduction

It has already become a cliché to say that infrastructure in general and Indian Ports in particular, are facing challenges not really seen before in more than 50 years of India's independence Any attempt, therefore, to look at the problems faced by ports and shipping and to seek to address them by looking at the opportunities and options that modern technology offers must be welcomed. But, these opportunities must not be wasted or frittered away. It is both interesting and constructive to track the growth and development of Indian Ports. From 5 Major ports, which handled 19 million tonnes of traffic when India attained independence in 1947, the country today has 12 Major ports and 1 (one) corporate port. Similarly, from 19 million tonnes of traffic handled in 1947, the Major ports handled in 1999 more than 271 million tonnes. In fact, it highlights as few other things can, the seriousness of the challenges being faced by the ports sector in India and the increased responsibility that the demands of a large and rapidly growing economy have placed on it.

The speedy development of Indian ports is no longer just a matter of keeping up with the international scenario It is of vital importance to the growth and development of India's burgeoning economy. Every day clear signs are seen that the era of the splendid isolation has ended and that, in the future, ships will vote more and more with their feet, for more efficient ports, whose performance parameters are benchmarked against international standards Typically the response to demands for greater efficiency and higher productivity have led to the call for privatization

In India, privatization has taken place both through the BOT (Build, Own and Transfer) or leasing route as well as through the establishment of green-field projects. Both have had their share of success. More green-field projects are on the anvil in Andhra Pradesh, Orissa, West Bengal and elsewhere and Major ports are opening up more and more to the idea of leasing or BOT as the preferred method of capacity expansion.

In a developing country, shortage of capital militates against high investment in individual sectors. Shortage of capital means higher opportunity costs and increasing difficulty in making allocation decisions. In 2001, the India Infrastructure Group, New Delhi which has examined these questions concluded that upto the year 2005-2006 as much as Rs 25,456 Crores would have to be invested in the ports sector. Of this, no less than Rs.6,758 Crores would have to come from non-budgetary resources. It would also help in the never-ending quest to improve productivity, efficiency and quality of services rendered by ports. In the context of the competitive environment in which Major ports in India must now function, it is difficult to over-estimate the importance of greater efficiency and higher productivity. 'India's port capacity is not increased to reduce the berthing time that ships take in our ports. We need to become a truly integrated national common market. If we do not have the vision and courage to maintain the standards of our ports like what places like Singapore maintain then we do not have the right to nurse any ambitions of turning into a world trade center' [03] Private sector participation is increasingly being seen as an important instrument of change, which will usher in technological up gradation and improved management techniques needed to help ports cope up with the

increased traffic that they would have to service.

Private participation in the ports sector must lead to a sea change in the techniques of marketing currently followed in ports sector. This in turn must lead to an additional business through the introduction of new lines that earlier did not call at the ports. Sophisticated marketing techniques, traditionally associated with the private sector must necessarily bring in new business and lines that had hitherto not called at the port. A change in the organizational form of the business such that the new entity enjoys a much greater degree of internal autonomy and operational flexibility may lead to greater efficiency and encourage the new organization to benchmark itself against comparable ports worldwide.

Deployment of assets and conduct of operations of the new port entity are guided by commercial considerations rather than by welfare goals or any other determinants and this emphasizes the shift to maximization of the net worth of shareholders' investments. Corporatization is more than just a move away from the more regimented confines of Government control. It is actually a step towards liberalization Corporations, in fact, represent a basic change in principal objectives from one of maximizing some welfare functions to one of profit maximization. Under the old regime, a Trust with individual Trustees representing different (and at times competing) interests sought to maximize the welfare functions of these interests. The shift to registration under the Companies Act, on the other hand, represents a conscious attempt to address commercial interests and thus maximize profit. Government is committed to the phased corporatisation of some of the Major ports in India starting with Jawaharlal Nehru port and going on to

the Haldia Port. Decisions on corporatising the other ports are being taken like Ennore Port. The aim is to see that over a period of time all these ports function as commercial entities with a commitment to their users that, as service providers, they will be second to none.

If the Port entities are able to face the challenges that the new and improved economic status throws open and provide to the users, the world class level of service that they have every right to demand, these Port entities will have truly contributed to a new awakening era in this sector.

In a globalize era, economic growth of a country depends to a great extent on its international trade activities. For this reason, port system assumes a significant importance in the country's economic growth as most of the international trade activities take place through ports. India too depends critically on her national ports system. However, while accounting for almost 90 percent of the country's foreign trade in terms of volume and 70 percent in terms of value, at present, the annual tonnage of India's sea borne commerce is still moderate compared to some of Asia's other economies such as China, Singapore and Japan.

In terms of performance, Indian ports continue to show lower productivity in comparison to efficient ports in the Asian Region, especially in terms of labour and equipment productivity norms. However, the principal indicator of port efficiency i e. Pre-berthing detention, average turnaround time and output per-ship-berth-day at Major ports have shown a marked improvement during 1998-99 as compared to the previous year. The average pre-berthing detention and the average turnaround time have come down from 2 4 days and 6.6 days in 1997-98 to 2.1 days and 5.9 days in 1998-99

respectively. Similarly the output per ship has increased from 4634 tonnes in 1997-98 to 4915 tonnes in 1998-99. [04]

In many ways, the ports sector in India is at a crossroad, particularly in the context of private sector involvement The policies developed, framework created, and decisions made at this juncture are crucial for long-term viability of India's ports system. New operational procedures and practices also need to be developed apart from simplified documentation and communication / information systems. All these need to be integrated into the terminal concept in line with the requirements of new technology.

1.3 Profile of Indian Major ports - in brief

India has 5,560 Km long coastline, which houses 12 Major ports and a corporatized port (Ennore Port): Calcutta, Chennai, Haldia, Kochi, Jawaharlal Nehru Port Trust, Kandla, Mormugao, Mumbai, New Mangalore, Paradip, Tuticorin, and Vishakapatnam. There are 185 other minor / intermediate ports as well along this coastline. The Kochi port is the oldest in south Asia Four out of the remaining eleven Major ports, i e. Calcutta, Chennai, Mormugao, and Mumbai are more than hundred years old The Vishakapatnam port is more than fifty years old. The Ports at Kandla, New Mangalore, Paradip and Tuticorin were developed after the country obtained independence in 1947. Jawaharlal Nehru Port at Nhava Sheva near Mumbai is the newest one, which became operational only in 1989. The Ports Authority of India regulates these ports.

1.4 Indian Chemical Industry – the touch pointers

[other than POL (Petroleum Oil and Lubricant) products]

1 4.1 Global Chemical Industry

Global Chemical Industry is almost USD 1.6 trillion/year and is about 6% of global GDP and equal to GDP of India. The top 25 chemical producing countries in the world are given in Table-1.

Petrochemicals dominate the industry with a share of 30% of total output (in value terms). Pharmaceuticals is the next largest sector with a share of 16 5%, closely followed by performance chemicals at 16%, both valued at around US$ 250 billion.

By the year 2010, the global industry is expected to reach a size of around $2.4 trillion, with the dominance of the triad (USA, Japan and Germany) but partly eroded by the emergence of China [05]

1 4.2 Indian Chemical Industry

Indian Chemical Industry is $ 31 bn/year accounting fewer than 2% of total world chemical industry. It is almost same as Spain and Taiwan, Brazil and Belgium are little ahead and China is 3 times that of India

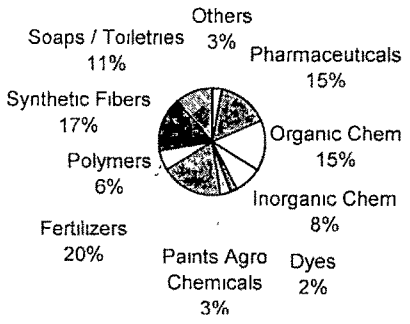
Table-1 : Top 25 Chemical Producing Countries

Country	Chemical Shipments (US$ Bl)
US	435.4
Japan	205.0
Germany	103 9
China	90.6
France	78 2
UK	50.0
South Korea	49.5
Italy	48 8
Brazil	36.2
Belgium / Luxembourg	35 4
India	**30.8**
Spain	30.3
Taiwan	29 6
Netherlands	28.4
Switzerland	26 3
Russian Federation	24.6
Canada	21 4
Mexico	15.0
Australia	13 9
Argentina	10.1
Sweden	9 4
Malaysia	7.6
Poland	6.0
Singapore	5.1
Thailand	5 0
Top 25 Total	1396 5
Others	195.6

Source . Chemical & Engineering News, June 26, 2000, p.57

Although not a significant player in the world, Indian Chemical Industry is well-diversified as explained in graph 1

Graph 1 : The Board Structure of the Indian Chemical Industry



Source · Chemical & Engineering News, June 26, 2000.

While Indian Chemical Industry is a small player by global standard, it is fairly diversified in all sectors of chemical industry. There is thus a base available from which Indian Chemical Industry can grow globally by putting up economic size world standard. Use of benchmarked technology and global marketing vision is a must. This, however, is required to be backed up by having cheaper and cleaner energy sources like; gas and adequate investment in infrastructure.

1 4.3 Situation Analysis

To give the required thrust to chemical industry, it is important to know what ails the industry and how it came to such a pass. The problems afflicting the industry are by now well-known and though it has become a cliché, it's perhaps worth mentioning in nutshell.

- high cost of raw materials and utilities
- high cost capital (which has since come down significantly)

- poor infrastructure (roads, rail, ports, power)
- unfavourable duty structure
- outdated technologies
- domestic centered approach without global focus

While some of these factors fall within the domain solely of industry and other factors are government related, the fact is that the chemical industry continued to be smug and complacent, continuing with a domestic centric approach, despite liberalization measures impacting the industry adversely. The Government with other pressures on it refused to bailout the chemical industry or was simply unable to do so. The situation is fast changing with industry introducing severe cost cutting methods, efficiency improvements and staying alive. Some have forayed successfully into the global markets.

1.4.4 Industry Clusters

A chemical cluster or chemical industrial park is a model of a best cost-reducing location – an integrated chemical industrial complex that can drive down manufacturing costs by 30% to 40% or even more in some cases. It essentially involves pooling of commonly required facilities and services, easy and combined access to feedstock, raw-materials and utilities which guarantee that the capital cost per unit of output comes down and that logistics cost is cut by a third and operating costs are lower. Such industrial parks are already the trend and are coming up in Korea, China, Taiwan and Singapore.

The chemical industry, instead of waiting, should attempt to convert clusters of existing units in Gujarat, Maharashtra, Andhra Pradesh

and Tamil Nadu into such models by outsourcing their common requirements of utilities, maintenance, environmental management, common port infrastructure etc., and even for supply management. This could save companies more than 10% in operational costs

1.4.5 Industrial situation and economies of scale

Lack of economies of scale is a persistent argument that is put forward for the existing set of problems in the chemical industry. It is critical to note that strategies to achieve economies of scale are quite different in an increasingly opening economy as compared to an autarchy. In an increasingly opening economy a firm can achieve economies of scale on the basis of cost and qualitatively efficient operations coupled with the provision of adequate level playing field when it comes to competition.

1.5 Indian POL Industry Scenario

1. World over the economics of oil products transportation is heavily titled in favour of ship transportation accounting for over 60% of total world products trade in 2001. [06]

The cargo movement in liquid bulk mainly comprises of imports of oil, other petroleum products, edible oils and chemicals. It also includes export movement of POL products. Overall, the liquid bulk cargo share in the total cargo moved through Indian ports, singularly occupies the highest share of about 42% (1999) out of the total cargo handled at Major ports.

Crude Oil and petroleum products through Major ports, has come down by 5 MMT in 2001-02, though it continuous to account for about

92% of total liquid cargo handled at Indian Ports.

As per hydrocarbon vision 2020, reported in Indian Infrastructure, June, 1999 – page 22 the hydrocarbons situation has been projected as under:

(In Million MT)

		2001-02	2011-12	2020-21
Demand Projections for liquid hydrocarbons – as per regression with GDP (Demand = 2 33867 + 0 0002746 x GDP)				
i)	Demand for power requirement	13	18	23
ii)	Demand for other than power requirement	105	226	347
		118	244	370

India's dependents on imports of Oil and Gas would rise from the level of 63% in 1998-99 to over 70% in 2020-21. The projected refining capacity to increase to 161 MMTPA by 2006-07, 241 MMTPA by 2011-12 and 301 MMTPA by 2020-21.

Above projections signifies the future requirements of additional port infrastructure capacities for handling liquid cargo at ports in India to receive VLCCs, installation of 15 SBM and creation of 25 Million DWT shipping tonnage. It would also require to put up additional tankage capacities of about 35 Million KL (existing tankage capacity is 9 7 Million KL). Transfer pipelines to facilitate cargo movement it would require capacity expansion from 29 MMT to 74 MMT [07]

This makes the study more meaningful as a special reference, signifying the importance of handling of liquid oil and chemical

cargo at Indian ports and the marketing concerns.

Due to dismantling of administered price mechanism (APM), the imports of oil & petroleum gains grater acceptance for larger ship parcel sizes.

New crude oil finds in India may have an effect on the oil imports and there can be the possibilities of:

(1) down trend in the movement of coastal cargo, as various refiners will be importing the crude oil directly to the nearest port from the logistics point of view

(2) some reduction in India's import bill on crude oil, in view of the Government permission for blend of 5% Ethanol (which may go upto 10%).

Liquid bulk handling and Ports infrastructure:

Liquid cargo handling unlike other cargo is a specialized operation, which requires a deep draft (draught) berths with capabilities for handling large tanker vessels / ships. Essentially, it calls for pipeline infrastructure for cost- efficient movement and handling from port to users' point and vice-a-versa Tendency to deploy large vessels like Suezmax, VLCCs (very large crude carrier) and ULCCs (ultra large crude carrier) has raised capacity constraints at the berthing ports and related infrastructure.

This has led to a favourable situation for setting up of SBMs, which allows vessels to moor away from the shallow short berth for facilitating cargo load and unload operations. About 7 such SBMs are operating including 2 at Sikka under Reliance Management, which handles about

40 MMT of POL products and 1 small SBM at Hazira to handle Naphtha. Kandla port managed Vadinar 2 SBMs handled about 30 MMT of Crude oil for Indian Oil Corporation on West Coast. On East coast, 2 small SBMs one operated by Cairn Energy at port Ravva, Visakhapatnam handles about 2 7 MMT of crude oil for HPCL and another one at Tirukkabaiyur in Tamilnadu to handle about 4 Lacs Tonnes of Naphtha.

The position of liquid cargo handled at Indian Ports in 1991 and during 1996-97 to 2001-02 is summarized as under

Table no 2

(Qty in MMT)

Year	Major Ports		Total	Minor Ports		Total	Total
	Crude & POL	Edible Oil & other chemicals		Crude & POL	Edible Oil & other chemicals		
1991-92	69 30	-	69 30	-	-	-	69 30
1996-97	98 08	8 16	106 24	-	-	-	106 24
1997-98	104 03	8 46	112 49	-	-	-	112 49
1998-99	107 44	10 20	117 64	-	-	-	117 64
1999-00	116.71	12 62	129 33	-	-	-	129 33
2000-01	106 82	13 06	119 88	41 21	1 57	42 78	162 66
2001-02	103 26	11 41	114 67	48 21	2 60	50 81	165 48

Source . India Port Report, 2003, P 177

The relative importance of transportation linkage for handling of liquid bulk in Port Sector can be gathered from the RITES (Rail India Technical and Engineering Services) Report as per Table No 3 below

Table No 3

The relative commodity share of various evacuation modes -forecast

(in %)

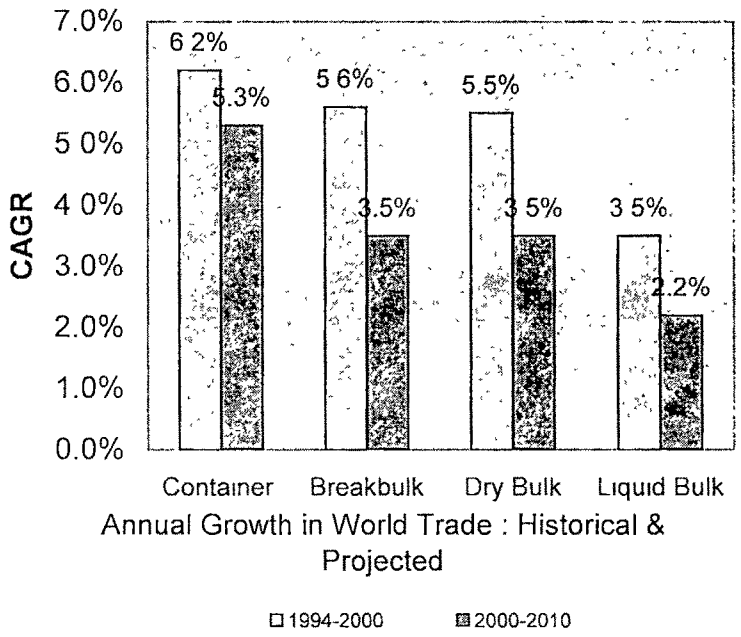
Products	Rail	Road	Pipeline
Crude Oil	-	-	100
POL Products	25	25	50
Other liquid bulk	20	60	20
LPG	50	25	50
LNG	-	-	100

Source RITES Report,2001

It has been observed in following table that in world trade, there is a consistent growth in the 'bulks' during 1994-2000 with a CAGR (compounded average growth rate) of 6 2% for container, 5 6% for Break bulk, 5 5% for dry bulk and 3 5% for liquid bulk. There is a modest outlook for future growth respectively at CAGR of 5 3%, 3.5%, 3.5% and 2.2% respectively in the future span of the years 2000-2010

Graph - 2

A more modest outlook for future growth



Annual Growth in World Trade : Historical & Projected

Source · DRI-WEFA, A Global insight company report,2001.

1.6 Port Development in India

1 6 1 Traffic projections at Indian Ports

From the present level of 369 million tones in 2001, the traffic is projected to grow to 1220 million tonnes within 20 years period i e. by 2021-22.

1.6.2 Policy initiatives by the Government to encourage private sector participation

Areas identified for private sector participation are:

i. Liquid bulk, break bulk, multipurpose and specialised cargo berths

ii. Container terminals warehousing, container freight stations, storage facilities and tank farms, cranage / handling equipment

captive power plants and dry docking and ship repair facilities

iii. Leasing of cargo handling equipment & floating crafts

iv Pilotage services

v. Captive facilities for port based industries

1 6.3 An Assessment

Though the Government of India had set targets for privatization and disinvestments in case of a number of PSUs, it could not go ahead as planned.

In democratic India where there are very large numbers of unemployed masses, privatization becomes a political issue rather than an economic issue. Such a situation produces strong resistance from the labour unions and the political parties.

Similar situations were faced by other developing countries too when they initiated privatization but eventually they have been able to dismantle their inefficient public institutions and got them replaced by globally competitive enterprises, strengthening and supporting their national economies.

With drying up of Central Government's budgetary support and declining internal resource generation of Major ports, there cannot be

any development in the port sector to handle the projected traffic of 1220 million tonnes by 2021-22, unless there is active participation from the private sector

The private sector participation in port sector is needed not only for capital investments, but also for enhancing the service quality and economic efficiency, which are considered vital to remain globally competitive. The future of port development in India unmistakably rests on the degree and extent of private sector involvement and participation

1.6.4 Benefits of privatization

The Government is benefited by way of raising revenue and improving external trade competitiveness. The transport and terminal operators benefits from cost effective port operations and services, which offers them more business opportunities The importers and exporters benefit by way of less port and handling costs. Ultimately the consumer's benefit by lower priced consumer goods.

1 6.5 Private sector participation in ports – An Indian experience

Though economic liberalization started in India in 1991, privatization in the port sector commenced only in the second half of 90's. The first Major private sector project in port sector was constructed and commissioned as a container terminal – "Nhava Sheva International Container Terminal (NSICT) at Jawaharlal Nehru Port in Mumbai in 1999 by P&O (Ports) Australia under a BOT Agreement. Comparative performance of container terminals in Jawaharlal Nehru Port presented an eloquent testimony of superior performance by NSICT over the

port's own terminal. Another container terminal has been setup at Tuticorin port by the Singapore Port Corporation.

Having convinced by the gains in productivity, efficiency and the service quality, the Government of India has now decided to encourage private sector participation in other Indian ports too Plans are underway for developing Chennai Port as a hub port on the East coast of India by P&O (Ports) at a cost of US$100 million, setting up an international container transshipment center at Cochin port at a cost of about US$ 500 million, developing a container terminal and associated facilities at Kandla port at a cost of US$100 million and construction of two bulk cargo berths at Mormugao port to handle 5 million tonnes of coal and coke at a cost of US$ 50 million Recently LNG terminal in Gujarat at Dahej became operational. Government have also floated plans to set up an integrated marine chemical terminal with an ultimate handling capacity of 25 MMT in future at a cost of US$500 million.

"Currently (April, 2003), the Major ports have a handling capacity of 344 MMT. The Government intends to enhance it to 470 MMT by the end of the 10^{th} plan period. The Government and Major ports can pump in Rs. 4,531 Crores and around Rs. 11,000 Crores investments are expected through the private sector to augment the additional handling facilities at the Major ports;

By adding additional facilities, delays and demurrage could be reduced significantly Ports average growth rate is about 13% and the Government had created two container hubs one at Chennai in the East coast and another at JNPT in the West coast. During the fiscal

ended 2002-03, all Major ports put together handled 313 MMT of cargo as against 287 MMT in the previous year 2001-02. Thus registering a 9% growth,

Our next task is to reduce the handling costs at Indian Ports to make them globally competitive. Currently, our handling charges are high compared to those ports in other countries;

The Government is initiating several steps for development of coastal shipping in the country. It is also encouraging private entrepreneurs in improvement of inland water transport. A Committee has been constituted to study the scope for development of Minor Ports which handles 25% of the total cargo in the country". [08]

A visionary project (sagarmala project) that will assimilate hundreds of sub-projects has been announced by the then Prime Minister, India, Atal Bihari Vajpayee.

This dream project belong to every Indian engaged in ports & shipping

This can drastically modernize the Indian Maritime Infrastructure including ports along the country's east and west coasts.

About 1,00,000 Crores project is envisaged through public private investments. FDI is allowed 100% in this sector.

The project will encompass all the facets of the maritime sector including education and training with an aim to fully realize the potentials of this sector. Time frame is about 8-10 years. It will give new life to the neglected sector like, inland waterways and coastal shipping.

It may ensure quantum leap into national and global connectivity.

1.6.6 Historical Milestones in the Indian Port Sector

Following explains the significant sector initiatives for growth of ports in retrospect.

1870 Calcutta (Kolkata) Port was commissioned. The port which ranks among India's oldest and only riverine port with the longest pilotage distance in the world.

1875 The first wet dock in India – Sasson Dock was constructed on the Bombay harbour followed by the Prince's and Victoria Dock in 1880 and 1888 respectively with the development of Bombay (Mumbai) port

1881 Madras (Chennai) port was commissioned. The foundation stone was laid in 1875 by the Prince of Wales King Edward II.

1908 The Indian Ports Act 1908 –the first ever comprehensive Indian port law was enacted for governing the administration of ports in India.

1925 Carriage of Goods By Sea Act was passed, which led adoption of uniform rules declaring minimum rights, liabilities and immunities of a common carrier attached to bills of lading.

1933 Visakhapatnam (Vizag) Port was commissioned as a commodity port. The first Major port to be set up along the coastline of Andhra Pradesh.

1948 Dock Workers (Regulation of Employment) Act 1948 was enacted.

1955 Kandla Port was commissioned. The port substituted the Karachi port, which became part of Pakistan following the partition of India.

1958 Merchant Shipping Act 1958 was passed to regulate the Indian shipping industry and provides measures of protection to coastal shipping.

1963 Major ports Trust Act 1963 passed. The Major port Trusts Act lays the basis for an institutional framework for creation of a port trust for a Major port.

Goa, liberated from Portuguese rule and became an integral part of India. The Mormugao (Goa) port on the West coast was declared as Major port.

1966 Paradip port incorporated as India's eighth Major port.

Indian Railways launch first-ever "Container service" providing an integrated inter-modal door-to-door service.

1971 Cochin (Kochi) port received containers for the first time from a conventional general cargo vessel of the American President Lines (APL).

1974 New Mangalore port was incorporated as ninth Major port on India's West coast. The State of Karnataka gets its first Major port.

Tuticorin port was incorporated as the 10th Major port, second Major port in Tamil Nadu.

1976 Dredging Corporation of India was constituted by Government of India to undertake dredging operations.

1977 Calcutta Port Trust commissions Haldia Dock Complex as a satellite port The port is 104 kilometers downstream of Calcutta

1978 Vadinar, a satellite port of Kandla located in Jamnagar district of Gujarat, was commissioned.

1982 India's first-ever State-level maritime board – Gujarat Maritime Board (GMB) was formed to undertake comprehensive development of minor and other intermediate ports in Gujarat.

1986 Inland Waterway Authority of India (IWAI) was constituted under the IWAI Act, entrusted with the responsibility of developing inland waterways in India.

1989 India's youngest and most modern Major port – Jawaharlal Nehru Port (Nhava Sheva Port) at Nhava Sheva, near Mumbai was commissioned in May, 1989.

1991 Coastal Regulation Zone Act passed leading to creation of Coastal Regulatory Zone Authority requiring compliance by all Greenfield port projects.

1993 Multimodal Transportation of Goods Act was passed with a view to rationalize customs documentation procedures as applicable to goods being moved through multiple modes of transportation, involving road, rail, coastal movement etc.

1995 The Government of Tamil Nadu converted the Tamil Nadu Port Department into Tamil Nadu Maritime Board (TMB), with the responsibility for development of minor ports in the State.

World Bank comes out with India Port Sector – Strategy Report in March, 1995 with detailed recommendatory proposals on modalities of infrastructure financing and port reforms roadmap.

1996 Government announces path-breaking policy guidelines for the first time for port sector for both overseas and domestic private sector investors

The Maharashtra Maritime Board (MMB) was constituted in November, 1996.

1997 Port (Laws) Amendment Act was introduced to give teeth to the new policy guidelines on private sector participation in port sector and a Tariff Authority for Major port (TAMP) established to regulate tariffs for Major ports.

1999 Gujarat Infrastructure Development Act passed in Gujarat paving way for privatization of port sector in the State

The first ever BOT project involving private sector port developer P&O Ports (Australia) – Nhava Sheva International Container Terminal (NSICT) became operational.

2000 The Ministry of Shipping (holding charge for ports) formed through bifurcation of erstwhile Ministry of Surface Transport.

PSA Corporation, Singapore and SICAL jointly established India's second private sector Container Terminal at Tuticorin port.

2002 India's first ever corporatised Ennore Port, near Chennai became operational.

Global tenders invited for Vallarpadam International Container Terminal, Cochin; Offshore Container Terminal, Mumbai port and conversion of dry bulk terminal into a container terminal, Jawaharlal Nehru Port Trust (JNPT)

JM Baxi Group & Dubai Port Authority (DPA) consortia signs BOT agreement to build Container Terminal in the outer harbor of Visakhapatnam port.

1.7 Indicators and archives – A brief outline to understand the sector importance

Economic Growth, Port Development, Port Traffic and Performance

A. Graphical

Indicators / Archives	Reference	Table No. (Appendix 01)
• Average annual growth rate has been in the range of 4 8% to 6.50% and projected to be 6% to 6.5% in 2001-02	Indian Economy-Growth Trends-Growth Rate in GDP – 1997-98 to 2001-02P.	14.
• The annual inflation rate declined from 6.9% in 1996-97 to 4.9% in 2000-01	Indian Economy – Inflation Trend 1996-97 to 2001-02.	15.
• % share of services sector increased significantly from 31.8% in 1950-51 to 43.7% in 1990-91 and to 52.9% in 1999-2000.	Indian Economy – structural changes between 1950-51 and 1990-91 and 1999-2000.	16.
• Total cargo handled at all Ports increased from 287 08 MT (Million Tonnes) in 1997-98 to 368.96 MT in 2000-01 90% of foreign trade is handled through ports by weight & volume.	Traffic handled - 1997-98 to 2000-01.	17.

• With the economic liberalization the traffic through Minor Ports has grown at a faster rate than Major ports.	% share of Major & Minor Ports in Total Ports Traffic between 1997-98 to 2000-01	18
• 52% investment proposed from Private Sector	Allocation of Resources – 9th Five Year Plan.	19
• Brazil and China are the leader.	International experience by number of projects in Port Sector	20.
• Malaysia and China are the leader.	International experience by investment in Port Projects in Port Sector between 1990-98	21.
• Kandla ranked highest. Calcutta ranked lowest.	Traffic handled at Major ports 1999-2000	22.
• POL products stood at 42% the highest.	Share of principal commodities handled at Major ports – 1999.	23.
• Kandla and Mumbai Ports ranks No. 1 & 2 respectively.	Portwise POL Traffic at various Major ports – 1999-2000.	24.

B. Statistical

Indicators / Archives	Title	Table No. (Appendix 02)
• Kandla and Mumbai Ports ranks No 1 & 2 respectively.	Traffic handled – 1997-98 to 2000-01 by Major & Minor Ports.	09.
• 70% of the Foreign Trade by value passes through the Ports.	Indian's Foreign Trade	10.

• Total investment required in the Port Sector development during next 20 years is US$ 21 86 Billion (Appx. : Rs.11,000 cr.)	Assessment of Investment requirements to fund port development 2001-02 to 2021-22.	11.
• By 2021-22, total traffic projected to be handled at Major ports would be 546.88 MT (45% share) and at Minor Ports 675.45 MT (55% share) from the cargo level in 2001-02 of 304.12 MT (77% share) for Major ports and of 89.65 (23% share) for Minor Ports.	Assessment of Traffic Projections at Indian Ports 2001-02 to 2021-22	12.
• Liquid and dry bulk cargo to increase from 167.46 MT & 165.81 MT respectively in 2001-02 to 493.81 MT & 425.12 MT respectively in 2021-22.	Commodity-wise traffic projections at Indian Ports between 2001-02 to 2021-22.	13.
• Total cumulative investment allocation upto Ninth Five Year Plan is Rs.13492 82 Crores.	Investment allocation made for development of Ports – First Five Year Plan to Ninth Five year Plan	14.
• Involves investment of Rs.78 76Billion and capacity addition of 92.45 MT.	Status of private sector participation – 2000-01	15.
• Total market is US$ 45 to 60 Billion.	Estimated available market in Port Sector	16.

• Calcutta, Paradip and Vizag ranked 1, 2 & 3 respectively in % utilization of capacity.	Capacity utilization at various Major ports, March, 2000.	17.
• Kandla Port ranked high for non-working time by % at Port whereas Calcutta Port ranked high for % non-working time at berth.	% of non-working time to total stay at berth / port – liquid bulk handling – 1999-2000.	18.
• Average parcel size rate was highest at Visakhapatnam in the DWT cluster of 40000 to 80000 DWT. Tuticorin remained lowest in average parcel size as well as DWT cluster.	DWT cluster of vessels – liquid bulk handled during 1999-2000 at Major ports.	19.
• Kandla ranked first and Tuticorin ranked the lowest.	Ranking of Major ports handling liquid bulk by no. of vessels handled.	20
• Kandla ranked the highest and Tuticorin remained lowest.	Ranking by cargo traffic (POL, crude plus other liquid chemicals) handled at Major ports – 1999-2000	21.
• Kandla ranks no. 1 followed by Visakhapatnam.	Berth capacities to handle POL and liquid products at Major ports as on 31.03.2000.	22.
• Maritime States	Maritime States and Ports of India (other than captive and intermediate ports).	23.
• Gujarat Ports ranked no. 1 followed by Maharashtra Ports.	Cargo handled by Minor and Intermediate Ports – 2001-02	24.

1.8 Logistics Costs in India – A Drag on Competitiveness

World Freight payments, as a percentage of total import value (cost, insurance and freight), stood at 6.21% in 2000 as per UNCTAD. For developed countries, it stood at 5 21% and for developing countries, it stood at 8.83%. For India, freight payments as a percentage of total import value (CIF) stood at 10.32% (1997) and around 11.4% in 2000

As per UNCTAD, such variation could be explained by differences in trade and shipping patterns, particularly in the liner sector, where the growing importance of feeder operations tend to place those countries not covered by mainline services at a disadvantage They reflect insufficient infrastructure facilities, low productivity of terminal equipment, and poor management practices in cargo handling.

Nevertheless, these figures reflect the higher logistics costs in India, which are a drag on the competitiveness. The following table reflects the per tonne handling costs in Major ports in India.

Table No. 4 Tonnage handling cost at Indian Ports : 1995-96 and 2001-02

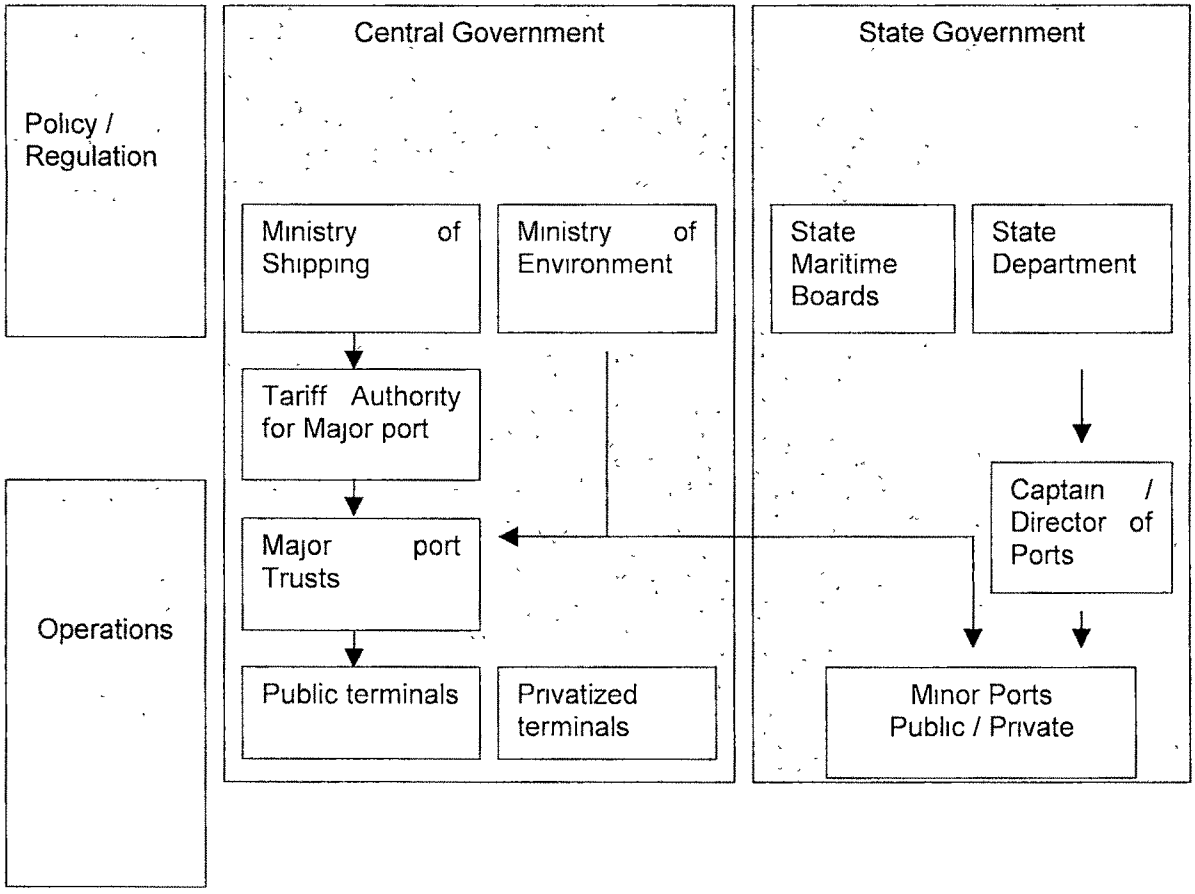
Port	Per tonne handling costs (Rs.)		
	1995-96	2001-02	%age increase
Kolkata + Haldia	125 6	229 4	83%
Paradip	76.5	95.1	24%
Visakhapatanam	44 7	51 3	15%
Chennai	49 5	85.3	72%
Tuticorin	30.4	45.4	49%
Cochin	71 0	129 2	82%
New Mangalore	45.3	61.7	36%
Mormugao	35 2	57 9	64%
Mumbai	92.1	195.5	112%
JNPT	168.3	99.0	-41%
Kandla	21.9	28.4	30%
All Ports	**63.4**	**95.1**	**50%**

Source : Indian Ports Association, Ministry of Shipping (2001-02).

1.9 Indian Ports Sector : Institutional Framework

Following Graph-2 explains the institutional framework of industry regulators for the ports in India.

Graph - 3



1.10 Indian Ports Performance – an overview

During 2000-01, Major Ports handled 281 million tons of cargo, while in 1950 five ports had handled 20 million tons. The main drawback with Indian Ports is that ships have to wait to berth and while at berth the handling is largely labour oriented, resulting in reduced productivity and inefficiency. Indian ports lack the zeal and competitive spirit required to attain speed in productivity. Other drawbacks include procedural delays, poor co-ordination with different departments. On a positive note, there are signs of improvement and things are slowly changing

Given below are some performance indicators used to judge port efficiency:

- Number of vessels handled
- Pre-berthing time
- Turn around time
- Output per ship berth day
- Berth occupancy
- Idle time at berth
- Employment at ports
- Operating income / expenditure

Vessels Handled

Major ports in India handled 14,000 vessels in 2000-01, as against 14,696 in the year 1999-2000. Even through the number of vessels is less by 4 per cent, there was an increase in the traffic by 3.3 percent. This indicates a marginal increase in average tonnage in the ships handled. The decrease in number of ships handled in Kolkata is maximum from 964 to 724, 25 percent down, the next is at Kandla 1,855 to 1,452, which is a 22 percent decrease in both cases, traffic handled has also decreased. On the other hand, Paradip Port handled 25 percent more vessels from 713 to 887 This is

another indication of that parcel sizes have increased. Transportation cost of cargo comes down while handling of larger vessels. Ports should facilitate handling of larger vessels by investing in dredging operations. The drawback of Indian ports is the restricted availability of draft and the required maintenance dredging for handling vessels

Pre-berthing Time

Average pre-berthing time at all ports has reduced except in case of Mormugao and Paradip, where it has increased by 39 and 25 percent, respectively The maximum reduction has occurred in case of Kolkata by 76 percent to 0.05 days. In case of Paradip Port, which has registered an increase of 46 percent in traffic, the increase in pre-berthing by 24.56 percent is understandable But in Mormugao, where the increase in traffic is by 8 percent, increase in pre-detention by 39 percent is on the higher side. It was noted that the least pre-berthing time was at Kolkata, which was 0.05 day, while the maximum was at Chennai, which was 1.5 days The increase in traffic at Chennai was 10 percent. The per-berthing time for containerised vessel was one day at Chennai, while it is almost negligible at other ports. Chennai port has a maximum pre-berthing time in respect of dry bulk, which is 2 6 or 2.7 days. This situation may ease due to operation of new Ennore Port, where the coal handling is being shifted. With P&O Ports taking up a stake in the Chennai Container Terminal Ltd. (CCTL), already the performance has shown an improvement and zero congestion has been recorded. It is heartening to note that average pre-berthing delays are decreasing, which is good sign as ships no longer have to waste valuable time before berthing.

Turn Around Time

This determines the productivity and efficiency of the port. Vessels would ideally prefer to stay the least time at a port for loading and unloading The average turn around time is the least in JNPT, which is 1.58 days, which is a reduction of 8 percent compared to 1999-2000, though it registered an increase in traffic of 24 percent, which is a good sign. The turn around time was until recently maximum at Chennai, which was six days. The situation has changed since privatisation of the terminal.

There is a reduction by 12 percent as compared to last year despite increase in traffic by 10 percent, which indicates that there is some improvement in handling. It is further seen in Mumbai, a maximum of 12.45 days are taken for conventional by bulk, while in case of Paradip it is hardly only 4.23 days. Mumbai Port should look deeper and take appropriate measures to reduce the average turn around time.

In respect of containers in JNPT, where the volume is at peak of 17.90 lakh TEUs(tonnage equivalent units), the turn around time is 1.09 days, a reduction of 8.14 percent, though the container traffic had increased by 33 percent. It is a healthy sign of improving productivity JNPT has become a hub port for India, and presently (2003) holds the 30th position amongst the container ports in the world [10] It hopes to come within the top 25 container ports in the world and will achieve this end, if it continues to focus on handling and takes all needed effective measures.

Tuticorin Port has registered maximum savings in turnaround time of 36 percent to 4.1 days, where 1,205 (12.5 percent more) vessels were handled and increase in traffic was 23 percent. Although there has been an increase

in productivity, but it has to go a long way to further reduce turnaround times.

In Chennai Port, the average turnaround time for container vessel was 3 9 days, which is the second leading container terminal after JNPT

In respect of liquid cargo, the least time taken is 1.94 days at Mormugao Port (10.89 mt), which handled 180 vessels. While the maximum time taken at Kolkata Port i.e 4.79 days (3 66 mt),(million tonne) which handled 251 vessels.

Average turn around time hinges on the following:

- Increase in productivity through mechanization / automation
- Decreased manual handling
- Taking care of equipment maintenance and spares so that there is less down time
- Improved co-ordination for better dispatch

Output per Ship Berthing

In respect of dry bulk and mechanical handling, Chennai has shown the maximum of 30,467 mt, which is appreciable; in comparison New Mangalore and Mormugao have shown 25,000 to 26,000 mt, respectively Paradip has shown about half 12,300 mt. With the commissioning of new scheme of coal handling, the output should increase.

In respect of liquid bulk, the least is at Tuticorin, at 4,890 mt, while the maximum is at Kandla 21,033 mt, where the handling is at mid-sea. There is considerable variation from 4,890 mt at Tuticorin to 19,076 mt at JNPT, nearly four-fold, which indicate that the ports should look into the adequacy of the facilities, provided for discharge from the ship.

As regards container traffic, the output is maximum at JNPT, 9,346 mt despite increase in traffic of 34 percent and the improvement in handling over last year was 15 percent This is a good sign though it has still to match to international level of Singapore, etc. In respect of Chennai, it is about 4,800 mt, which is half at JNPT. Since Chennai is the second big hub for container handling, the productivity has to increase. Perhaps bringing P&O for operation should improve the situation in coming years.

Maximum handling of cargo 44.6 mt has been at Visakhapatnam where the average output has increased by 29 percent, which is again a healthy sign. The maximum increase in output is at Tuticorin, 38 percent where the traffic increase is 23 percent. This is commendable, though in absolute terms it is only 4,000 mt, which is far low. The least average output is at Kolkata, 2,305 mt In Kolkata, the handling of containers is 2,602 mt.

It is thus clear that there is an increase in the average output per ship berth day at all Indian ports. The operation personnel and planners should go into details to streamline the operation, refurbish equipment / maintenance and augment the facilities, so as to increase the efficiency / capacity of the ports.

Idle Time at Berth

The least idle time at berth is at JNPT, which is 9 percent, the next is Kandla 22 percent and the third is Mormugao, which is 23 percent, the maximum idle time is at New Mangalore, which is 46 percent, and Kolkata / Haldia has 44 percent, while the idle period at old Kolkata Port with excess staff (11,601), least traffic of all the Port (7.1 mt) is understandable, the idle time at (New Port) Haldia also at 44 percent is undigestible. That shows the culture of working in the region. All ports average is assessed as 34 percent and out of

12 (counting Haldia as a separate port), six ports are even below the average. There is a need to drastically look into the detailing and causes of idle time and take relevant measures to improve the situation.

Idle time can be minimized to 8-10 per cent, this will increase the port capacity by 25 percent Reduction of idle time should be a priority, not only for port operation personnel, but also for the staff heads of unions By reducing the idle time, the productivity increases, the output per ship berth day increases, cost of detaining the ship comes down, waiting of pre-berthing reduces and this will be a boon for shippers and transporters as ships will be available earlier and the transportation cost comes down.

Employment at Ports

The number of staff at JN Port is 1,804, and it handles a total throughput of 10.1 mt (excluding the staff / traffic at the private terminal of NSICT) For comparatively (25 percent less) traffic, Kolkata has 11,600 people or seven times that of JN Port. For marginally higher traffic, Tuticorin has a workforce of 2,046, while Cochin has a strength of 5,502, which is almost three times that of JN Port. Chennai handled traffic of 41 mt and Kandla handled 45 mt in 1999-2000 The strength at Kandla is 4,314, while that at Chennai is 10,953. Maximum strength is at Mumbai, which is 31,671. Kandla, Mormugao and Paradip have a staff strength of around 4,200 but traffic handling has no comparison as is evident in the table below

Table No. 5

Port	Staff	Traffic (2000)
Kandla	4,314	36.20 mt
Mormugao	4,525	19.63 mt
Paradip	4,132	19.90 mt

Though it can be argued that the staff strength of a port depends on the pattern and quantum of traffic, like oil or ore, or coal, or containers and whether the port has facilities for mechanical handling or not. The general impression is that Indian ports are overstaffed and this results in inefficiency. Staff should be utilised and employed judiciously as overstaffing does not result in increased productivity.

Hence, there is a need to critically examine various activities in each port and make earnest attempts to eliminate excess or unwanted staff. For this, the co-operation of staffs, the union, and the political will is essential It is gratifying to note that with the liberalisation, now there is a better awakening, the retirement age is brought back to 58, and golden handshake / Voluntary Retirement Schemes (VRS) are encouraged in ports. Hence, one can expect remarkable improvements in the next five years.

Berth Occupancy

The international norm for berth occupancy is 65 percent; the ideal for container berth is 50 percent The norm is, that berths should wait for the ships and not the reverse. In the past ten years, there has been an improvement in this aspect; yet the figures in some cases are alarming. In Kandla, it was 93 percent, while at Chennai it was 85 percent, Visakhapatnam, Haldia, Tuticorin and Mormugao are in the range of 80

percent, it is only in Kolkata that the occupancy is around 50 percent. Increase in handling capacity with mechanical means and construction of additional berths, where needed, can reduce the berth occupancy. That would make ship occupying at berth with lesser time and leave the berth free very early

Operating Income / Expenditure / Ratio

Kandla, New Mangalore, and Tuticorin have the operating expenditure / income ratio of less than 0.6. All other ports have a ratio of 0 75 to 0.80. This is the reason for ports not being able to finance their development requirements from internal resources. Other performance indicators, if improved, would definitely give better and comfortable results and a cushion for inversed internal resources available for development.

On the other hand, the major complaint is that the tariff rates in Indian ports are quite high as compared with foreign ports. Increased traffic, improved productivity with lesser staff, would enable ports to reduce their tariff per tonne, an improvement is expected in the next five years.

Days Ahead ..

Various performance indicators for the year 1999-2000 and 2000-01 were analyzed. It was observed that although there have been improvements over the past year, there is room for improvement in each port. A constant review of performance and necessary improvements should result in better performance, productivity and capacity at Indian ports. A deliberate saving in vessel idle time alone can ensure a 25 percent higher capacity at the ports. Internationally, Indian ports have earned a bad name in delay and cost, due to poor all-round efficiency. It is hoped that port operations, R&D and

Maintenance Development will critically review the performances and bottlenecks in the system. The co-operation of staff, union and political will are also very essential. With a policy of active private participation being adopted by various ports, a change for the better is expected.

With the growing shift towards privatisation, the Indian port sector, which till date followed the landlord model of operation, is gradually, changing towards the service model of operation. Increasing competition, mostly from the new commissioned privately managed ports like Gujarat Pipavav Ports Ltd. at Pipavav, Gujarat Adani Ports Ltd. at Mundra, Gujarat Chemical Port Terminal Company Limited at Dahej, Nhava Sheva International Container Terminal Ltd at JNPT has led the age old major ports to work hard towards modernising their facilities, reducing excess workforce, improving efficiency levels and ending the days of congestion.

While increased investments mostly through private sector participation takes care of the modernisation of infrastructure facilities, reduction of workforce is being done through generously packaged VRSs, by shelling out a significant amount of internal reserves of the ports concerned.

The Indian port sector is likely to emerge as a key player in the international maritime industry with a leaner and fitter state having a strong backup from the state and private sector once the drive for efficiency is over [09]

Table No. 6

Performance of Major Ports in India 2000-01

Rank in 2000-01	Major ports	Rank in 1999-00	Traffic handled in 2000-01 (mn tonnes)	Year-over-year growth in 2000-01 (in percent)	CAGR in last decade (in percent)
1.	Visakhapatnam	2	44.68	13.1	8.7
2	Chennai	3	41.21	10.1	5.3
3	Kandla	1	36.71	-20 7	6 4
4.	Mumbai	4	27.03	-11.1	-0.7
5.	HDC*	5	22.80	10.1	7 2@
6.	Paradip	9	19.90	45 9	11 2
7.	Mormugao	6	19.63	7.7	2.8
8.	JNPT	8	18.58	24.0	24.8
9.	New Mangalore	7	17.89	1.6	8.4
10.	Cochin	10	13.12	2.5	6.1
11	Tuticorin		12.28	22.9	9.2
12.	CDS^	11	7.16	-30.6	

Source : Indian Ports Association and Ministry of Surface Transport

HDC* - Haldia Dock Complex, CDS^ - Calcutta Dock System, @ - considering the total traffic of both HDC and CDS

From the study of the some of the ports on the west coast of India, apart from Kandla, a Major port, there are about 11 intermediate and 29 Minor ports functioning under the control of Gujarat Maritime Board in Gujarat The Gujarat Minor Ports are playing the model role for Minor ports in India and about 75% to 80% of total cargo handled by Minor ports in India is contributed by Gujarat Minor ports A comparison of some of the key ports is as under

Table No. 7

Comparison of key ports on the West coast of India

	JNPT	Kandla	Pipavav	Mundra	GCPTCL
Type of port	Major	Major	Minor	Minor	Minor
Jurisdiction	Central Govt	Central Govt	State Govt.	State Govt	State Govt
Management	Trust	Trust	Private Sector	Private Sector	Joint Sector
Tariff fixation flexibility*	0%	0%	100%	100%	100%
Tariff regulator	TAMP	TAMP	None	None	None
Draft (metres)	12	9	11	17-18	16
No of berths	19	12	4	4	1
Channel length (km)	16	25	3	1 8	2.5
Further capital dredging constraint	Yes	Yes	Yes	No	No
Exposure to cyclones	Medium	Low	Medium to high	Low	Lowest
Kind of vessels handled	Panamax (GL)	Handymax (G)	Handymax (G)	Panamax (GL)	64300 DWT Liberia
Type of cargo	Dry/ liquid / containers	Dry / liquid / containers	Dry/ containers	Dry/ liquid	Exclusive liquid chemicals
Rail connectivity	Available	Available	Not available	Available	Narrow guage to be converted
Road connectivity	Available	Available	Available	Available	Available
Turnaround time (Panamax)	9 days	8 days even for Handymax	NA	4.5 days	2 5 days

*Private players can adjust prices as per market demand and supply

Source : Information with respect to JNPT, Kandla, Pipavav and Mundra are as per Report published in Business India – Nov. 26 – Dec 9, 2001, Page 105 and for GCPTCL as per company sources

02 MARITIME INFRASTRUCTURE : CONSTITUTIONAL, MANAGEMENT, LOGISTICS AND ECONOMIC ASPECTS.

2.1 Prologue

It is essential to study the business process and dynamics in terms of the constitution, management, operation and economic aspects by the marketer of the port facilities. While framing a marketing structure, practice and policies, total understanding of the business process and operations would be prerequisite, beyond the customer (need, value satisfaction and relationship) and the market rationale

2.2 Components of Seaports Infrastructure & Superstructure

In brief, following explains the activities and service agencies involved

Maritime Access Infrastructure	**Port Superstructure Services**
Channels, approximation zones	Port conservancy, Maintenance Dredging
Sea defense (breakwaters, locks)	Pilotage & Towing Services
Signaling (lights, mooring buoys)	Navigational aids
Port Infrastructure	**Port Authority / Port Operator**
Berths, docks, basins	Stevedoring / Bunkering
Storage & Stacking Yards	Cargo Equipment & Transport Services
Internal connections (roads, others)	Transport Operators
Cargo Infrastructure	**Terminal / Port Service Operators**
Cranes,	Crane operators
Cargo Terminals, ICD / CFS	Cargo handling & movements

Land Access Infrastructure	Railway, Road & Inland Transport-Operators
Road, Railways, Pipelines	Railway & Road Connections
Conveyors, Inland waterways	Inland Cargo Terminal

Associated Agencies

Shipping Liners / Agents

Regulators like customs,

Importers and Exporters

2.3 Port infrastructure Efficiency Measures

The efficiency measures in Port operations are on following lines

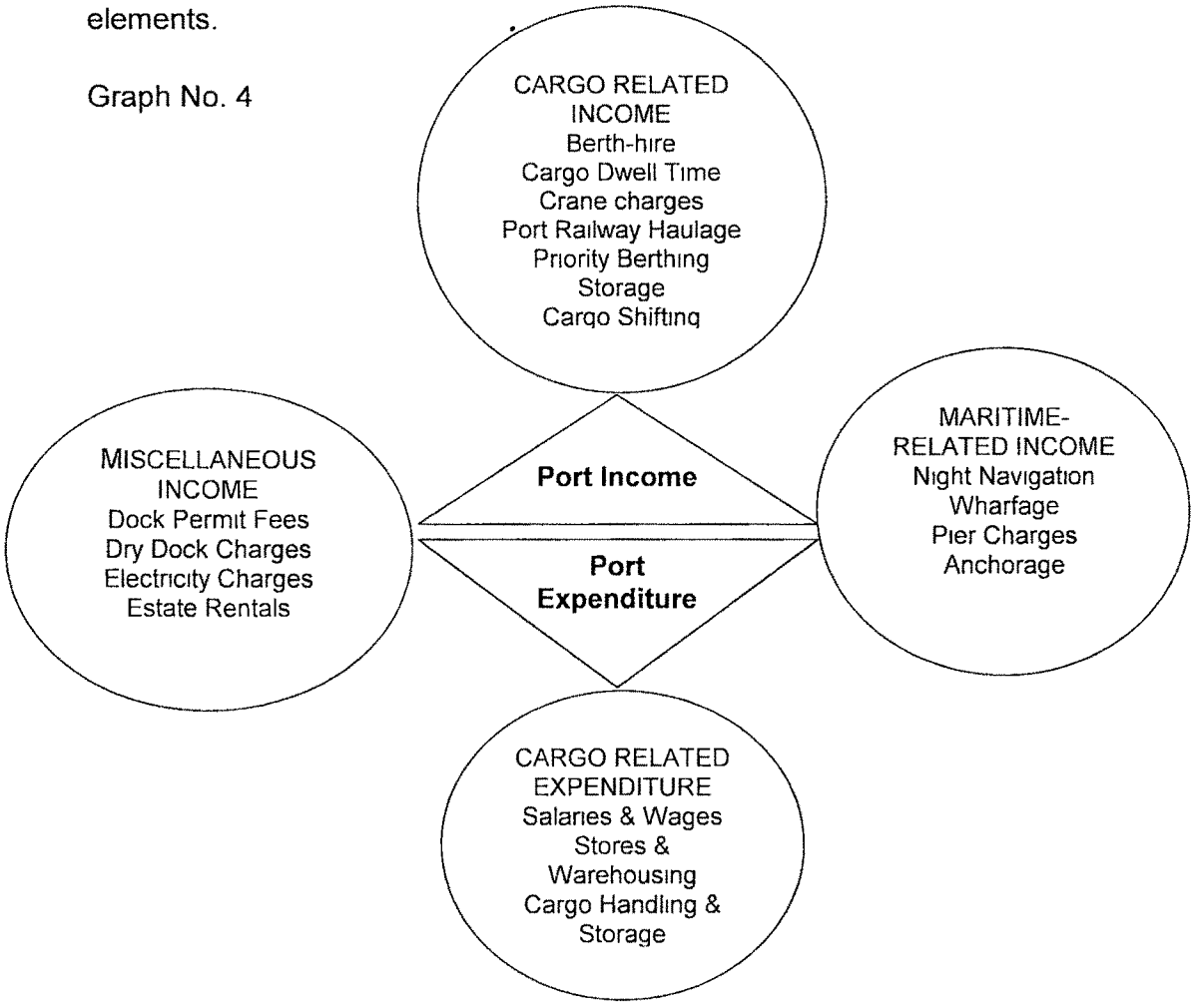
Performance indicator	Description
Average Ship Turnaround Time	Total hours vessels stay in port (buoy-to-buoy time) divided by the total number of vessels.
Average Waiting Rate	Total hours vessels wait for a berth (buoy-to-berth time) divided by total time at berth.
Gross Berth Productivity	Number of container moves or tonnes of cargo (for break-bulk and bulk cargoes) divided by the vessels total time at berth measured from first to last line.
Berth Occupancy Rate	Total time of vessels at berth divided by total berth hours available.
Working Time / Over Time at Berth	Total time of vessels serviced at berth divided by total hours at berth. Reasons for non-working time may include labour agreements and work rules, rain, strikes, equipment failure, port operating schedules and holidays.
Cargo Dwell Time	Cargo tonne time days in port from time of unloading until vessel exits the port divided by cargo tonnes.
Ship Productivity Indicator	Total number of moves (for containers) or tonnes handled (for break bulk and bulk cargoes) divided by total hours in port.

Tonnes Per Gang Hour	Total tonnage handled divided by total number of gang hours worked.
TEU's Per Crane Hour	Total number of TEUs handled divided by total number of crane-hours worked.
Tonnes per Ship-day	Total tonnage of cargo handled divided by total number of vessels in port.

2.4 Illustrative structure and components of port income and expenditure

The broad structure is as under to understand the revenue and spends elements.

Graph No. 4



Nomenclature of the elements may differ on case-to-case basis at the ports depending on the structured policy for the revenue and the expenditure

2.5 An overview of ports – constitutional and management aspects

2.5.1 Economics of Port Planning

Port planning is necessary for any port development and the more extensive and costly the development, the more comprehensive should be the planning work that precedes it. In general, for a completely new port, the planning seeks to determine:

- the most suitable location for the port
- the type and extent of the facilities required
- the best layout of the port
- the most economical method of construction
- the most appropriate phasing of development

Ports, like other essential items of physical infrastructure, are often difficult to justify in economic terms at the time, when planning for them should really be carried out. That is, before the existing facilities become overloaded and is clearly incurring additional congestion costs in passing cargo through them.

The benefits of port development are invariably derived from reduction in the costs to ships using the port. It is argued, that this reduces the freight costs of the cargo (in practice, this often means that the freight costs do not rise as rapidly as they would otherwise have done) and that these cost reductions are eventually passed on to the consumer in cheaper prices for the goods. The port gains, if it is able to accommodate greater quantities of cargo that might otherwise be diverted to other ports or not move at all, thereby increase its financial revenue. Ships benefit primarily in the reduction in costs of

ship's time waiting to use the port.

2 5.2 Port Authorities

While in the past ports mainly have been administered, today's modern ports must be managed. The range of activities at individual ports may differ greatly, but all ports have several activities in common.

The basic activity consists of the ownership of land, quays, piers, and port surface The port either maintains or controls these facilities itself or rents them out to other parties. Many ports are also conservancy authorities, responsible for maintaining and dredging the channel to the harbour and for control and safety of traffic in these channels, including the provision and maintenance of navigational aids, pilotage, towage and tugging

The port typically owns and operates or rents (in the case of container and bulk cargo ports) mechanical equipment such as cranes, transtainers, forklifts, prime movers, straddle carriers, freight lifters, and trailers. It owns and operates transit shades, which form part of the standard general cargo berth and also open or sheltered distriparks, warehouses, storage areas, container freight stations, which are within or outside of the port limits area.

Finally, most ports employ at least some of the labour required for moving cargo, but the degree of control over cargo operations forms one of the chief differences between ports. Labour in container freight stations, distriparks, warehouses, etc, may again be either privately employed or port labour Although there is currently a tendency towards 'privatization' of entire port or parts of port, in most countries

the port 'owner' is still the governmental authority, whether national (the State) or regional or local Its representative is known as the Port Authority.

2.5.3 The need for Port regulation

Many government decisions relating to ports are contingent on the physical and human geography of the local area. For the decisions to be effective full account has to be taken of these fundamental local factors and the governmental intervention must, therefore, be as close as possible to the people and places concerned, which implies the need to establish a port authority to be regulated Port authorities are needed for the following reasons:

1. Property Rights: In the early days, when sailing ships were small, their goods were often ferried to and fro in small boats capable of working off beaches, where the tidal range was sufficient, the ships were sometimes beached and the cargo handled with the help of carts driven alongside at low tide. Both methods are still being used in some places. They do not require any port facility at all, and hence, provide no justification for a port authority. Elsewhere, however, substantial works are needed in the form of breakwaters, quays, piers, anchorage grounds, quarantine areas, large storage areas, warehouses, and so on. Some of these works extend necessarily into the water, often for long distances. The reservation of space, as well as the construction of these works, cannot be left to individual initiative.

In most countries, while territory may have a ready market, the aquatory (areas of water, and the water column and bottom beneath) cannot be bought and sold. There is no market for these areas because there is no legal recognition of exclusive property rights and without these there is no likely position to build at all or anything substantial. Port constructions have to be substantial if they are to be worthwhile and endure. It follows that, for anything beyond the most primitive of ports and harbours, some public authority is needed to establish property rights in the aquatory.

2. Planning: Once the legal security for the works has been obtained, it is necessary to decide where they are to be placed and how they are to be built Thus, approach channels, breakwaters, and similar works, maneuvering areas for ships and harbour water areas, transport links between the port and the hinterland transport networks (which are of obvious public benefit and for which planning determines the possibility of providing and operating the structures and equipment within the port) must be constructed and run by somebody vested with governmental powers Although the planning and execution of these works are inherently industrial and commercial activities, the decision to undertake the works and the choice of their sites are action of a governmental nature, having regard, in particular to their consequences for the ports usage and for its natural and human environment Thus, port authority is required for planning

and decision-making purposes.

3. Public goods and externalities: The traditional definition of public goods and services are those where it is arguable that they will not be provided sufficiently, satisfactorily or at all by mere market mechanisms. Examples are, streetlights, streets, roads, pathways and parks. In ports context, these public goods include breakwaters, lighthouses, navigational aids, mooring buoys, oil pipelines, port equipments, radars, radio sets, piers and so on. All of these are likely to benefit the port as a whole. No individual port user is likely to provide them because they will benefit his competitors as much as himself. Public bodies must provide such goods and services. A public authority must make the allocation of space within the port center among the port operators and users. The usable space being limited, making it freely available would rapidly lead to a disorderly situation or to certain parties gaining a dominant position, situations, which would be incompatible with the role that the port must play in the service of the national economy. The allocation of space must therefore be carried out in a manner defined and controlled by the port authority.

4 Law and order for promoting port efficiency. The port authority must also perform the task of coordinating the various activities, which take place in the port (which does not in any way mean that it must necessarily play a part in performing them) The authority must likewise ensure that these activities are carried

out in accordance with the laws and regulations and that they contribute effectively to the implementation of the national port policy. Providing security and ensuring safety through the implementation of codes of conduct like MARPOL (Marine Pollution Act – A convention to prevent Marine Pollution by International Maritime Organization) and ISPS (International Ships and Ports Security – a code of International Maritime Organization on safety) are also responsibilities of a port authority.

Another reason for having public sector port authorities is that they may develop the port's efficiency and control for necessary competition. One of the classic externalities, in the sense of significant economic effects extending beyond the financial accounts of those direct responsible for them is pollution. In ports this may occur through spilling oil or garbage into water Another externality may be the existence of wrecks blocking navigation channels - this need to be removed quickly. Appropriate rules for pilotage, vessel information and traffic control may be needed For all this an authority with governmental support is required. Port authority is also required to have dialogue with and coordinate activities with other departments and organisations, like customs, immigration, health, police, civil defense.

2 5.4 Types of Port Authorities

Port authorities are very diversified in their practices and functions.

Port authorities can be 'comprehensive', 'doing all' or 'nearly all' that needs to be done within their port areas including the handling of cargo on the ships and a shore. The three principal types of port authorities known are the landlord port, the tool Port, and the Operating Port.

The Landlord Port

The powers of the port authority are limited to the decisions concerning land use, reservations of space for the port areas and construction and use of public port works. The port authority leaves it to individual operators (public sector or private enterprises) to construct and operate the works and equipment necessary for the operation of ships, the storage and internal transport of traffic, and to operate other services provided for traffic (sea pilotage, towing, inshore pilotage and so on). Such port authority will make the necessary sites available to individual operators on the basis of contracts specifying public service obligations or conversely, permitting private use of the facilities Port authority acts like the owner of the port property and grants short or long-term leases or concessions to other private enterprises

The Tool Port

In France and in several African countries it is the port authority that purchases and installs certain heavy handling equipment (gantries, cranes), which are then run by port operators. The port authority will perform its role by financing, building or purchasing the works and equipment necessary for efficient operation of a port and making them available to operators under short-term contracts generally incorporating public service obligations The port then plays the role of

a 'tool port', as it has created the 'tool' but does not operate it. Some port authorities may combine the tool port role with that of a landowner role, if it has sufficient space available.

The Operating Port

The port authority may consider not only that it should provide certain works and equipments, but that it should also act as their operator. It may also consider it to be in the public interest that it should in itself set up and operate certain services for the port traffic. Like other operators, it then maintains direct industrial and commercial relations with port users, while retaining its governmental powers vis-a-vis the port community. These ports are then known as 'Operating ports', and normally form part of the public sector.

2 5.5 Port Management And Operation

Every modernization or improvement policy aims at increasing operating efficiency by speeding up the ship/shore transfer and enhancing the ship turn-around time by more rapid clearance of cargo and containers by handling larger vessels and again by increasing transfer speed. To achieve this, the port must make institutional and procedural improvements first, in order to utilise the existing resources in an optimal way. Thereafter, further improvements can be gained from a more systematic maintenance of the existing equipments, from replacing obsolete equipment, and from purchasing additional equipment. Finally, investment in civil work should be envisaged to increase the physical capacity of the port. Speed is the name of the game in the shipping

Singapore has earned itself the reputation of being one of the most efficient ports in the world [11]. By handling an average of 64 containers per ship hour, Singapore is able to turnaround container ships in 8 to 10 hours and over 90% of the container ships calling at Singapore are berthed on arrival. PSA's mission is to excel as a global hub and make Singapore a premier maritime center. They promise their customers to meet their needs and provide them with value-for-money services promptly, reliably and efficiently. PSA is committed to its employees by recognising that they are most important resources and by creating a rewarding, challenging and innovative environment, PSA shall help them achieve their fullest potential. PSA also believes that teamwork and harmonious union management relations are essential for high productivity. For gaining competitive advantage with the regional and neighbourhood ports, PSA intends to use the latest port and information technologies.

2.5.6 Ports infrastructure Management – in global context

2.5.6.1 Introduction

Shipping has a direct bearing on the development process of a country. It helps to improve the foreign exchange situation, creates employment, foster's technology transfer and economic integration, and helps to ensure national sovereignty Apart from these direct effects, shipping investment substantially contribute to the diversification of the economy of the investing country, as it requires a whole range of support industries and services.

Where there are ships there are bound to be ports - places where ships carry their cargo or passengers

Almost every country with a sea coastline has what may be called a 'port system', generally composed of one or more trading ports of different sizes. The organisation of such a system requires, first of all, knowledge of the purposes, which the ports are intended to serve and the functions they must perform in order to achieve those purposes. Being the place where ships are loaded and unloaded, the port forms the connecting link between the shipping service and the inland transport system Port is, therefore, a point of interface with the other modes of transport, such as rail, road, river and air transports

2.5.6.2 Definition of a Seaport

A seaport is defined as a terminal and an area within which ships are loaded and/or discharged of cargo and includes the usual places where ships wait for their turn or are ordered or obliged to wait for their turn no matter the distance from that area. Usually it has an interface with other forms of transport and in so doing provides connecting services. A seaport, therefore, is a place where goods and passengers transfer between ship and shore As such, it commonly occupies a site where there is adequate sheltered water; and this may be largely natural (as at Vancouver, Canada); largely artificial (as at

Ashdod, Israel), much improved by man's efforts (as at Port Klang or Singapore) or it may even be an open roadstead where fine weather is frequent and calm water may generally be relied upon (as at many Mediterranean and Caribbean ports)

Port activities contribute to the economic independence of nations, which is vital to their political independence, and they perform a strategic role in their trade.

2 5.6.3 Function and role of an International Port

Ports exist as an important and fundamental part of the overall pattern of trade and transport. The range of activities in individual port may differ greatly, but the ports have several activities in common The basic role of an international port consists of the ownership of land, quays, piers and port surface. The port either maintains or controls these facilities itself or rents them out to other parties

The task of promoting the interests of the port knows almost no limitations in time or space. Its aim is to serve the prosperity and welfare of the regional or national community and beyond the borders to make contribution to improving the quality of life.

The primary function of a port is to provide for efficient, low cost, intermodal and intramodal transfer, inspection, storage, form change and control of cargo. Therefore, a port must be effective and be able to accommodate ships and vehicles of other modes

of transport interfacing at the port. It should act as an integral part of a chain of transport links designed to move cargo from place of low utility to a place of high utility – 'right place in right time with right technology at right cost'.

Ideally, ports should provide the capacity for a continuous flow between land-water, as well as water-to-water transport modes Hence, ports are the critical links between major transportation links.

The five most important roles of an international seaport can be summarized as follows:

1 Provision of shelter from the elements. This arises when, due to heavy seas and storm conditions prevailing, ships take shelter in the environs of a port and, thereby, seek safe anchorage or berth.

2 Cargo and passenger handling. A place where ships can load or discharge their cargo, and/or passengers. This is, in fact, the prime function of a port.

3. Support services for ships This embraces virtual link, stores, bunkering, ship repair, crew change and so on In larger ports, such as Hong Kong, Singapore, Nagoya, Rotterdam, Hamburg, London etc, dry-docking and shipyard facilities are also available for ship surveys, maintenance and overhaul purposes.

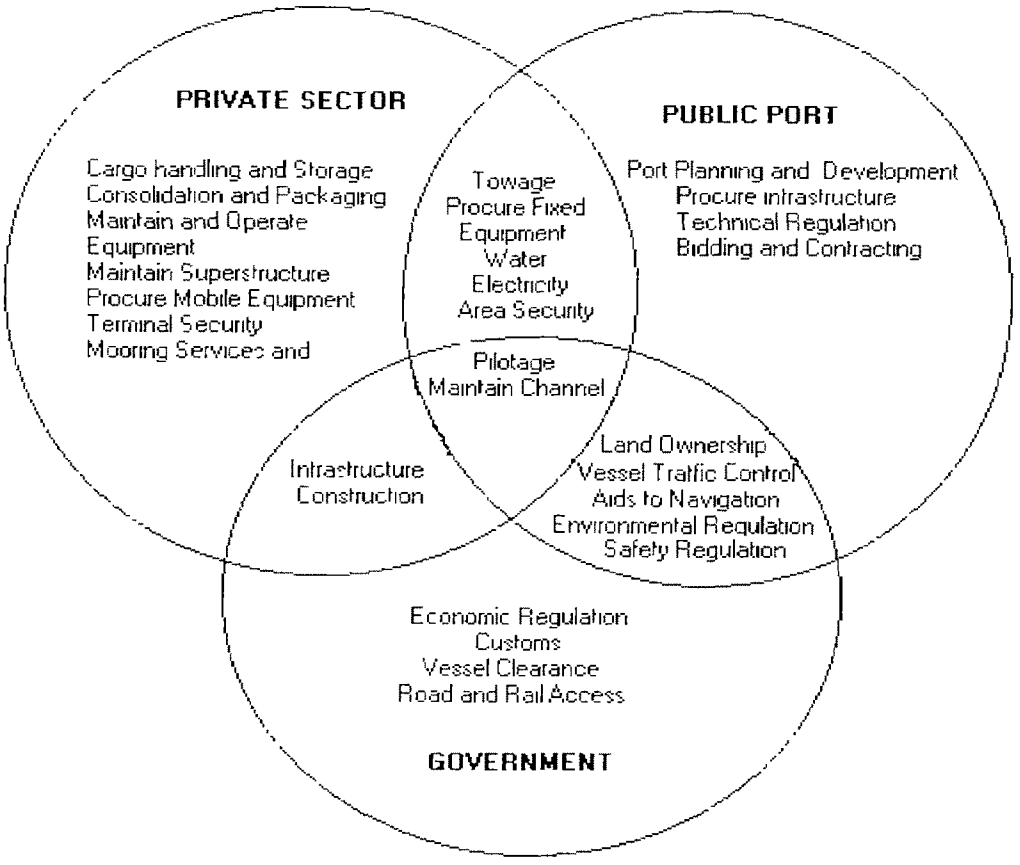
4. A base for industrial development. This involves the provision of industry and its infrastructure to facilitate development of trade passing through the port. It may be a steel plant, a cement factory, an oil refinery or petrochemical complex, a sugar or grain center etc. It can also be a free port with Free Economic Zones or Special Economic Zones.

5. A terminal forming part of a transport chain Such an interchange point links the shipping service with other transport modes to provide an overall trade distribution network, often under the combined transport operation concept. This involves land, air, rail or inland waterways/canal transport.

Ports, today, are the strong points of the economy of countries possessing a coastline and they constitute the 'lungs', as it were, for their foreign trade. They are the compulsory transit point for the bulk of this trade, permitting the import of goods, which the country does not itself produce in sufficient quantity, and the export of its major items. This contributes heavily towards the development of national economy. Ports are also good places for the provision of further services, which add value to the products transported and thus help better to meet the increasing demands of trade

2.5.6 4 Allocation of responsibility for port related activities

Graph No. 5



It is observed from above Graph 4 that due to the increase in specialization of maritime shipping (dry bulk, liquid bulk, neo-bulk, containers, project cargo, reefer cargo); it has led to a comparable specialization in cargo-handling services in a pattern of allocated responsibilities.

2 5 6.5 Objectives of port privatization

To stimulate Private Sector participation in port sector, the underlying objectives have remained different from country to country as can be seen from following:

Objectives	Need programme	Approach
Introduce Private Management	Reduce political interference in appointment of managers. Professionalize port management Introduce performance incentives	Corporatization of port operations. Commercialization of port management. Management contracts. Lease storage areas Concession terminals.
Improve Labor Relations	Introduce modern labor relations. Eliminate restrictive labor practices Reward labor productivity.	Private cargo- handling labor Concession terminals.
Decentralize Ports	Provide local representation. Mobilize local entrepreneurial talent	Corporatization and creation of subsidiaries Concession of terminals.
Promote Public Ownership	Increase public share- holding. Strengthen market capitalization.	Capitalization through sale of shares. Concession of terminals to publicly held companies.
Increase User Participation	Increase role of shipping lines, cargo owners, land transport and logistics entities in port operations.	Lease berths and storage areas. Concession terminals to users.

Reduce Government Deficits	Reduce deficit through sale of government assets. Reduce capital and operating subsidies.	Divest through sale of assets. Capitalization through sale of shares
De- politicize Labor	Remove cargo handing labor from government employment,	Deregulate cargo-handling, transfer cargo-handling responsibilities to private sector, concession terminals.
Downsize Government	Downsize port bureaucracies. Reduce pension liabilities.	Institutional reform through corporatization of port operations and commercialization of port management.

Source ADB Report on world ports,2000

2.5.6.6 Program implemented on the objectives to Increase Private Sector Participation in the port sector by various countries are as under:

Objectives → / Country ↓	Downsize Bureaucracy	Finance Deficit	Finance Facilities	Improve Efficiency	Labor Problems	Commercialize Management	Widen Share Ownership
Australia					X	X	
France					X		
New Zealand					X	X	
United Kingdom (UK)		X		X	X[a]		X
United States (US)			X	X	X		
People's Republic of China (PRC)			X	X		X	
Hong Kong, China			X	X	X	X	
India		X	X	X	X	X	
Indonesia			X	X	X	X	
Korea, Rep. of			X				
Malaysia	X		X				
Pakistan			X	X		X	
Philippines			X	X			
Singapore			X				X
Sri Lanka			X		X		
Taipei,China					X		
Thailand			X	X	X		
VietNam			X	X		X	

X denotes programme implemented by the respective country.

X[a] re-enforces earlier reforms Source . ADB Report on world Ports, 2000.

2.5 6.7 Approaches Used to Increase Private Sector Participation by various countries are as under:

Approach → / County ↓	Decentralize	Corporatize	Partial Privatization		Landlord Ports		Capitalization	Sell Assets
			Services	Joint Venture	Leases	Concessions	Share Offering	
Australia		X			X			
France			X		X			
New Zealand		X	X					
UK			X					
US			X		X	x	x	X
PRC	x	X		X				
Hong Kong, China						X		X[a]
India						X		
Indonesia			X	X		X		
Korea, Rep. of		X	X		X			
Malaysia		X		X		X	X	
Pakistan					X	X		
Philippines			X			X		
Singapore		X					X	
Sri Lanka				X		X		
Taipei, China			X		X			
Thailand					X	X		
VietNam			X					

X[a] sale of development rights

X denotes approach adopted by the respective country

Source · ADB Report on world ports,2000.

2.5.6 8 Findings of workshop (held in Manila on 9-10 December, 1998) on private sector participation in Infrastructure [12]

Specific observations regarding the Port Sector were as under.

1. Effective port operations and investment require the unbundling of port networks to produce more client-oriented autonomous ports. The tendering process should encourage unbundling of both the network and the services within the ports Where ports are not financially viable, they should not be bundled with profitable ports, but rather treated as stand-alone facilities that are turned over to local government or put under management contract using a competitive tender.
2. The landlord port structure is more robust than the traditional resource (tool) port or operating port because it accommodates different forms of public-private partnership, while recognizing that the only fixed responsibility of the public port is the ownership of the site.
3. The most effective and efficient procedure to promote private sector participation (PSP) in the port sector is to lease existing facilities with relatively short-term lease agreements that allow for reorganization and improvement in productivity Subsequently, concession agreements can be used to encourage private investment in additional capacity. Where this capacity is required immediately, or labor problems make it difficult to unbundle existing facilities, then concessions might precede lease agreements.

4. The critical element in any effort to promote PSP is competition, or at least the potential for competition This can be done through direct competition between private sector service providers, between public and private sector providers and between bidders in the case of a tender for an activity with only one supplier.
5. The private sector should assume all commercial risks. Other risks should be negotiated based on which party has the capability to mitigate the risk.
6. Continued public investment in basic infrastructure will be required, since it is difficult to recover the costs in a period that is reasonable for the private sector. Public investment may also be required to reduce the barriers to entry. This is important where a new entrant must make a large investment before competing with existing service providers.
7. The best form of tariff regulation is market regulation. Failing this, the second best is through the terms of the contract. These would identify non-competitive services requiring regulation, clearly state the maximum rates, the formulae for escalation, and arbitration procedures in the event of discriminatory behavior in excess of that justified by commercial pricing. The third best is through the establishment of a regulatory agency outside of the port, which would evaluate requests for tariff increases. All of these are preferable to a vague procedure for negotiating

future changes in tariffs

8. Reforms in the port sector requiring changes in legislation consume a considerable amount of time. In many cases these reforms will change institutional structures and responsibility but not the people or the corporate culture. Therefore, they are of limited value. Transactions involving the transfer of specific facilities and services to the private sector are faster and should precede sectoral reform, since it introduces new management and a new culture into the port.

03 GLOBAL TRENDS

3.1 Changes in International Trade and Shipping

The past ten years has been a period of great and rapid changes in the port and shipping industries. These changes have been felt most profoundly in the liner shipping sector, where containerization continues to make a vital contribution to the India's rapidly growing international trade in the globalization process. These changes are reviewed as under in the context of the larger forces that have brought significant changes in the structure of the world economy and how shipping lines, governments and port operators have responded to the challenges and opportunities that have arisen as a result of these changes, and how these responses have in turn transformed the relationships between the various parties.

It is impossible to understand properly the changes that have occurred within the liner shipping and ports over the last decade without understanding the context in which these changes have taken place

The fundamental underlying factor has been an increased reliance on international trade as the primary engine of economic growth and development This is a major ideological shift: many economies have in the past pursued development strategies that have emphasized self-sufficiency and the protection of domestic markets. However, in the recent past there has been a growing consensus that the route to prosperity lies in integration within the global economy.

The establishment of the World Trade Organisation (WTO), with the prominent role it has subsequently played in the liberalization of trade, is perhaps the clearest and most important institutional outcome of this trend However, the adoption by regional associations, including APEC and ASEAN, of policies that are designed to enhance trade between their constituent economies has played an important supporting role Partly through such multilateral institutions; partly through bilateral agreements; and partly through unilateral initiatives, most governments of the ESCAP (Economic and Social Commission for Asia and Pacific) region have adopted policies that reduce barriers to both trade and capital flows.

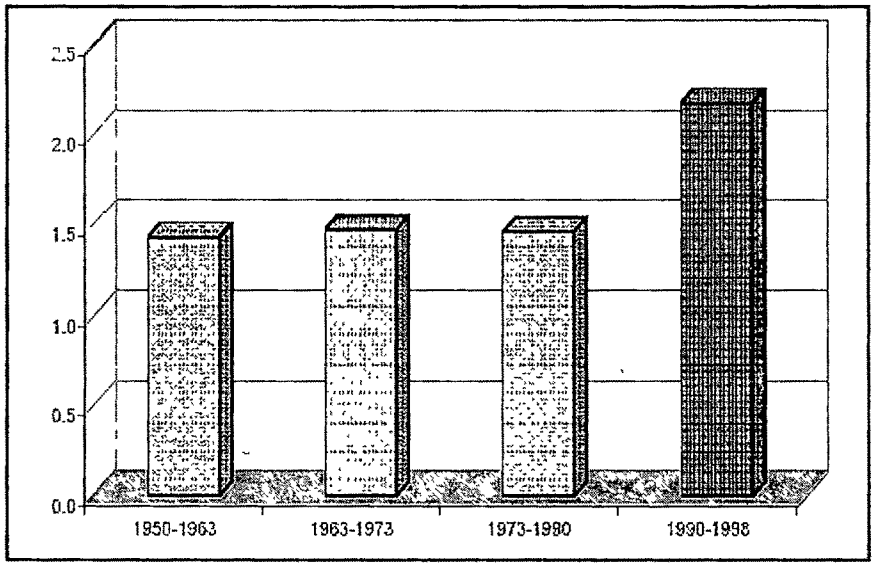
While reduction of trade barriers has increased the volume of trade, relaxation of restrictions on capital flows has accelerated the shift from low to higher value commodities Greater acceptance of foreign direct investment (FDI), particularly in manufacturing, has induced many global and regional corporations to relocated some or all of their production to countries with lower labour costs This trend commenced with the relocation of simple manufacturing processes for low valued

commodities, but has since progressed to manufacture of intermediate and higher value goods and components.

3.2 Relationship between world trade growth and world economic growth over the post-war period

The impact of these policy changes can be seen clearly in following Graph 4 below. The rate of world economic growth fluctuated greatly during the port-war period: from around 6 per cent for much of the 1960s to a little over 2 per cent during much of the 1970s. However, from 1950 through to 1990 the relationship between economic growth and growth in the value of international trade stayed almost constant· the value of trade grew approximately 1.5 times as fast as the world economy. The last decade has seen a major change in this ratio the value of trade is now growing at around 2.2 times the rate of growth of the world economy [13]

Graph - 6



3 3 Competition and regulation of liner shipping

While there have been important changes in the hardware of the liner shipping industry, especially in the size of ships, there have also been some significant changes which, although less visible, have been just as influential This includes both the regulatory environment in which shipping lines operate and the way in which shipping lines themselves organize their activities.

To understand the changes that have taken place in the regulation of liner shipping, it needs to look at broader political and economic trends. Over the last 20 years or so, there has been an increasing tendency towards economic liberalism in the shaping of industry policy, and there has been increased reliance on competition as the primary force of economic activities. Any industry structures or arrangements that are seen to diminish competition or interfere with customer-supplier relationships are seen as suspect in this environment.

Meanwhile, advances in global communications and logistics management have increased performance expectations of all transport enterprises. Some of the major changes those have been adopted by most if not all major lines are to improve service quality and to reduce the costs. Larger vessels have been brought into service in order to reduce unit cost

The changes were to seek ways to 'add value' through diversification and enhancement Different lines have sought to do this in different ways. Many, led by the American lines, have sought to establish seamless intermodal services, extending their operations to include

inland haulage and offering door-to-door transportation Some, including P&O Nedlloyd, have developed other elements of the logistics chain, expanding their warehousing, cold storage and related activities. Most have taken advantage of more flexible regulatory regimes to move away from strict adherence to standard tariffs into price/service packages tailored for particular customers. Those lines with the capacity to do so have sought to negotiate global service arrangements with clients, protecting themselves by packaging a range of services that new entrants would find very difficult to emulate.

Finally, many lines sought to improve the quality of the service that they offered to customers by increasingly sophisticated cargo care, improved information systems, and the introduction of a range of e-commerce initiatives

3.4 Implications for Ports

In the intensified port competition, international terminal operators are extending the scope and scale of their activities and are operating terminals in ports around the world.

Hutchinson Port Holdings (HPH), whose original stronghold was in Hong Kong, has developed a wide range of investments on the Chinese mainland, and has expanded its terminal operations to a total of 159 berths in 28 ports around the world. PSA Corporation of Singapore currently operates terminals in 10 different ports and continues to maintain its expansion strategy Around 48 million TEU, or 21 per cent of the world container throughput, was handled at the terminals operated by PSA and HPH in 2000. Australian-based P&O

Ports has a lower global throughput, but an even more diverse and growing range of port investments, which includes facilities in China, SE Asia, India, the Middle East, Europe and Africa.

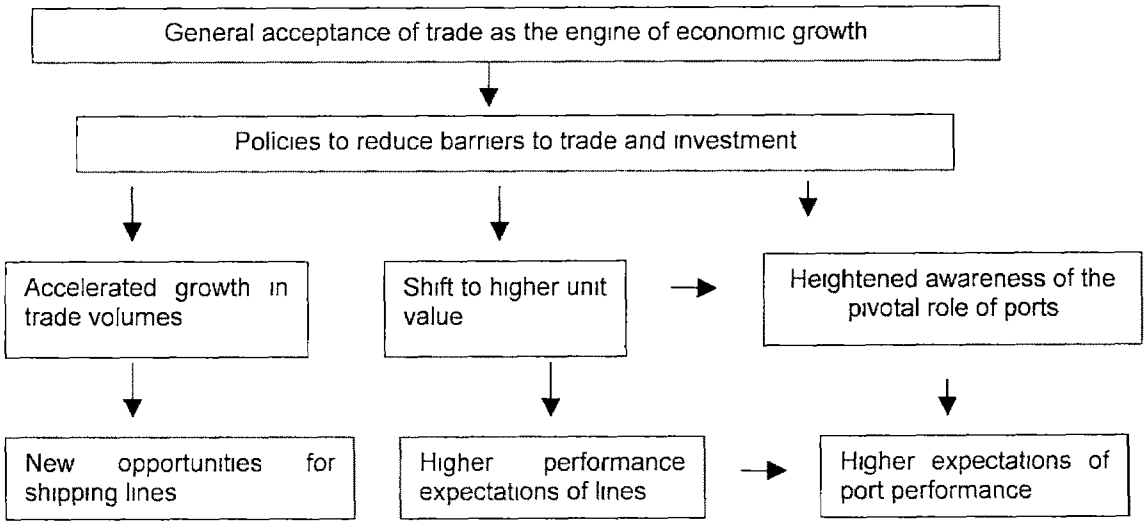
The developments of the last decade or so have seen a shift in the balance of power between shipping lines and ports – a shift in favour of shipping lines. The greater volumes that are now controlled by a single line or alliance mean that the capacity of an individual line to seriously affect the business of even a Major port is now much greater than it has been in the past. The most dramatic recent example of course is Maersk Line's transfer of its business to the new port of Tanjung Pelepas. This decision of a single shipping line is expected to cost Singapore – the world's premier hub port – approximately 15 per cent of its total business. One of the main considerations in this and a number of other recent shifts is control – more and more lines are seeking dedicated terminal facilities and direct control over landside operations.

Finally, for most ports what comes in by sea must go out by land Larger ships with faster discharge rates place increased stress on the land transport interface, and generate a need for faster and more efficient intermodal connections. These demands for enhanced port performance and increased investment in port facilities have in turn led to changes the port policy of many countries. As a result, there is a sea-change in the basic paradigm of port-carrier relations. The traditional paradigm is that ports serve basically local trade and shipping lines come to the cargo. Under the emerging paradigm,

shipping lines serve regional, largely non-local trade, and the cargo is moved – by feeder or intermodal service – to the ship.

3.5 Changes in international trade and responses of shipping and ports

Chart No. 7



3.6 Increasing role and facts of the time

The world trade has been growing faster than the world production, which is more international than ever before with global expansion of industries Several major firms have already become global firms or are in the process of becoming so. This has resulted in a significant and growing presence of their business outside the country of origin. Almost half of the trade between industrialized countries is between the subsidiaries of the same companies Today, there is practically no such thing as purely public infrastructure projects any more in countries organized under liberal market economy principles. In most cases, so called " public projects " include a strong dose of private intervention. For instance, private contractors build infrastructure; operational equipment is furnished or sold by private firms. Symmetrically, purely private projects are still constrained, controlled, regulated by public organizations or entities, which retain the rights of approving lay-outs,

prescribing norms, imposing levels of service, enforcing competition rules, or safety standards, setting or approving fares and rates, or tolls, and so on

It can be said that all of us live, almost everywhere in the world nowadays, under the 'P.P.P. paradigm' : (the Public Private Partnership model). For all practical purposes, the effectiveness of the formula hinges on what the partnership concept means, and on what it suggests as implementation methods and principles, and on how to effectively share benefits and risks.

Precisely, it is true that in the last ten or twenty years, the level of private intervention in traditionally public projects has increased widely, through a multiplicity of processes; from full privatization of former public entities, at one end to the transfer of management from public to private at the other end, passing through various forms of concession-type agreements, including all variants of BOT, BOOT, BOO etc.

It may seem trivial to state that the key to a successful outcome in all these different kinds of projects lies, for an important part, in an appropriate distribution of risks and responsibilities between public and private actors. But, as it is turned out for many other widely accepted principles, it might sometimes be easier said than done and mistakes or uncertainties left unaddressed early in the process, may well cost dearly during the implementation and operational stage, with sometimes both parties being affected.

Commercial terminals handle the operational side of the business; attract and serve the traffic, manage commercial risks and in doing so rely on extended transport networks allowing them to market their services within the framework of an increasingly integrated transportation and logistics sector

Operational investments policy, transport chain organization, and intermodal combinations remain under their control, in cooperation with transport operators, which themselves are sometimes their clients and sometimes their shareholders

Public port and marine authorities handle all statutory duties relating to transport operations, in particular traffic safety issues and technical regulatory matters. Furthermore, they have to make it possible for the commercial operators to unfold their activities by providing the basic infrastructure assets required, in terms of access, protection, and connection between networks. In addition, a main public responsibility remains to the establishment of transparent and reliable administrative framework to handle official trade documents processing, together with the implementation, when needed, of trade facilitation improvement programs Against this background, port authorities will also likely become major players in helping develop new logistical multimodal platforms outside the ports boundaries, by playing the catalytic role they are best placed to assume between the various public bodies involved and the private transport operators

In summary, ports and terminals are facing nowadays quite different challenges than the ones they used to deal with twenty years ago The new distribution of roles between public and private actors, in particular, calls for an appropriate allocation of duties and responsibilities, of risks and rewards, to make the global transportation system work to its best efficiency

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