

# CHAPTER 1

## ECONOMIC DEVELOPMENT THROUGH PORTS

### 1.1 INTRODUCTION

A port becomes a wheel of economy if it runs efficiently. Presently the function of a port is not only limited but has expanded to a logistical platform. The efficiency of a port is important in international trade since a seaport is the nerve of foreign trade of a country.

A seaport is 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 items which the country has a surplus or has a competitive edge to produce contributing to the development of its economy. Besides, a port is also a place for the provision of further services, which add value to the products transported and thus helps the increasing demand of trade.

The globalization of world economy has brought about tremendous increase in exchanges of goods across the world. The world trade also accelerated as cost of shipping has increased due to the introduction of economy of scale and the development of technology in shipping.

To cope with the ever growing world trade, ports of every country will no doubt continue to play a critical and important role in providing the cheapest mode of transportation.

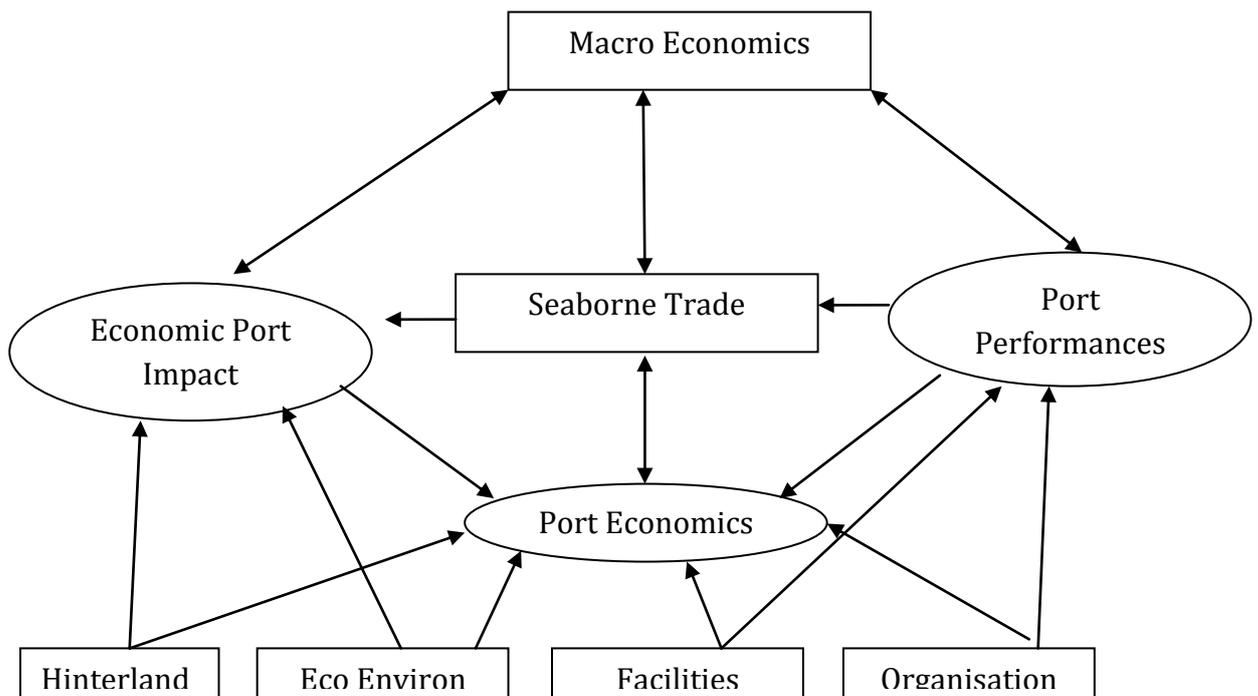
#### **Relationship between macroeconomics, port economics and port performance**

Port performance and port economics are closely related with macroeconomics hence, any changes in port traffic or operation and port / port organization has an impact on national economy particularly on the hinterland.

Indian seaports are today more than just government owned public utilities; they are indeed, focal points of convergence for several contending and competing business interests from shipping lines, port authorities, and individual terminal operators to

freight forwarders and inland logistics agencies; not to leave out the shippers (the exporter-importer fraternity) whose cargo is what is being ultimately being transported. They represent what may rightly be considered a complex mosaic of contractual and business relationships, which in turn give rise to maze of regulatory and operating institutions and procedures and ever-changing rules of dynamic inter-play.

**Relationship of Port Economics And Macroeconomics Figure 1**



Under the impact of first-generation port reforms, initiated since the mid-nineties, following economic liberalisation and globalisation policies, the entire gamut of existing institutional arrangements and underlying transactional and business processes in the port sector have been undergoing a profound transformation.

Consequently, conventional port and terminal ownership, management and regulatory frameworks guiding the port operations are undergoing changes in line with broader process of functional evolution of ports and global maritime trade.

The critical changes underway in the port sector have many facets that need to be brought under a comprehensive review and research scrutiny from contemporary perspective. Few attempts made in the past have merely focused on the historical and social aspects of Indian port sector, without examining the underlying business and economic processes that make port inalienable part of a larger national and international economy.

Not too surprisingly, there are hardly any significant books or research monographs that portray a contemporary emerging picture of the Indian port sector, as the gateways to global trade. This leaves a large gap to be filled and considering that Indian port projects are now increasingly becoming key destinations for strategic business investments and are increasingly becoming key links in the rapidly expanding global trade, understanding of the working of the port sector becomes an urgent and critical task both from the public policy angle and strategic business decisions.

Indeed, there have been a number of project-specific and port-specific studies and long-term forecasts on cargo traffic growth made by a number of technical and business consultants to the port and shipping sector. Recently, Rail India Technical and Engineering Services (RITES) have come up with “Perspective Plan for Indian Port Sector - Vision 2020” for the Union Ministry of Shipping.

On Gujarat port development, the Dutch government and the Gujarat Maritime Board have jointly come up with Port Development Gujarat Programme (PODEG). The Planning Commission sub-group too has recently also come out with a Report on General Cargo including Containerised Cargo for the Tenth Five Year Plan (2002-2007). The scope of these studies are however, limited to specified objectives of analysis and are not designed to contribute to wider level understanding of the process of port sector reforms and the macro-level workings of the port sector in the country.

It is against this backdrop that we thought it necessary and relevant to come out with the present report. The project is a maiden attempt to present a broader overview of the port sector in the Saurashtra, Kutch region and macro-level business and public

policy perspective. The effort has been to focus on some key issues of interest to current participants in the port sector and be discursive rather than recommendatory.

The report seeks to thus basically aggregate range of issues and viewpoints in the process; weaving together different and discrete issues and contentious points of debate in the ongoing process of port reforms in Saurashtra & Kutch.

Nevertheless, I have sought to summarize some key trends in the port sector, in terms of the changing profile of the port infrastructure development and port terminal operations, under impact of privatisation and corporatisation of ports.

The study also has a major focus on the unfolding traffic dynamics at various major and minor ports and the evolution of regulatory policy framework for the port sector both at the global and national levels. I hope this study serves an important objective of generating broader awareness and interest in macro-level issues and concerns impacting future development of port sector in the country.

I hope it will also meaningfully contribute to the national debate on the ongoing port reforms, which has key implications for the development of the national economy by more fully unleashing the potential of ports.

### **India's Maritime Trade**

India's maritime trade comprises of export-import trade in various bulk commodities like crude oil and other petroleum products, iron ore and coal, besides general purpose cargo. Over the last ten years, since the onset of economic liberalization, there has been a significant spurt in handling of value-added goods mainly in form of containerised cargo movement, in several Indian ports.

This has given rise to many new dimensions in the development of the port sector in the country. Containerisation of cargo has brought about a significant redefinition of port services and demands for highly sophisticated handling equipment and logistics service efficiencies.

The shift away from commodity nature of India's export trade is particularly, noticeable in the marked shift towards increasing value added exports and drive for

global competitiveness. The shift in the pattern of trading is however, yet to find adequate support in terms of a maritime infrastructure.

Interestingly, in the past ten years while overall cargo growth (reckoned at about 9-10 per cent) has been quite impressive, new demands have been generated on the port sector for adding on more cargo handling capacity and creation of new-dedicated berths and cargo terminals.

Consequently, the port sector is going with considerable business optimism with respect to generation of increasing cargo traffic volumes and of trade in general in the coming years. Considerable future business potential is also seen with respect to generating enhanced earnings from port sector operations through improving efficiencies and other value-added activities contributing also thereby to making country's external trade competitive in the global market.

Though India's overseas trade in value terms is still less than one per cent of the total world trade, the physical cargo volumes handled at the seaports have however been quite sizeable. The Indian major ports have together handled 715.62 million tonnes of cargo in fiscal 2007-08 and taken together with 196.38 million tonnes of the cargo traffic handled in the same year by the minor, intermediate ports.

### **Development of Port Sector in India**

India's has around 7517 km of natural peninsular coastline strategically located on the crucial East-West trade route, which links Europe and Far East. The coastline has 12 major ports and about 180 other minor and intermediate ports.

Most of the major ports have been established in the last few decades of post independent economic planning, while two of the older major ports like Kolkata and Mumbai were established more than hundred years back during the British colonial rule.

The development of the port sector in India till recently has been exclusively responsibility of the Central government and had grown into a natural public

monopoly of sorts. In fact, it still continues to be so despite recent trend towards privatisation of port infrastructure development.

The seaports of India have played a historical role in the development of maritime trade and economy in India. Indeed, maritime trade in India has been and continues to be almost synonymous with India's overseas trade, accounting for over 95 per cent of India's total cargo volumes.

The structure, composition and direction of India's overseas trade has however, been undergoing important changes over the last five decades since India's independence, in line with the broader macro-level changes in the economy. The last ten years of economic reforms and globalisation, in particular, have accelerated the process of change towards a more diversified commodity composition of trade.

There is also a perceptible shift in the growth of the economy, in terms of changing composition of Gross Domestic Product (GDP), initially represented by shift from pre-dominance of agriculture to increasing share of industry and subsequently of the services sector.

**Table No. 1**

	<b>Units</b>	<b>1951</b>	<b>2000</b>	<b>2007-08</b>
<b>Cargo Handled at Major &amp; Non Major Ports</b>	<b>Million Tonnes</b>	<b>22.5</b>	<b>334.3</b>	<b>715.62</b>

**Source: Statistical Outline of India**

**A. EXPORTS (including re-exports)**

Exports during June, 2011 were valued at US \$ 29213.14 million (Rs. 131031.43 crore) which was 46.45 per cent higher in Dollar terms (41.06 per cent higher in Rupee terms) than the level of US \$ 19948.18 million (Rs. 92892.68 crore) during June, 2010.

Cumulative value of exports for the period April-June 2011 -12 was US \$ 79003.74 million (Rs 353338.87 crore) as against US \$ 54221.16 million (Rs 247574.57 crore) registering a growth of 45.71 per cent in Dollar terms and 42.72 per cent in Rupee terms over the same period last year.

## **B. IMPORTS**

Imports during June, 2011 were valued at US \$ 36872.49 million (Rs.165386.41 crore) representing a growth of 42.46 per cent in Dollar terms (37.22 per cent in Rupee terms) over the level of imports valued at US \$ 25883.03 million ( Rs. 120529.51 crore) in June, 2010.

Cumulative value of imports for the period April-June, 2011-12 was US \$ 110613.80 million (Rs. 494763.07 crore) as against US\$ 81202.60 million (Rs. 370182.12 crore) registering a growth of 36.22 per cent in Dollar terms and 33.65 per cent in Rupee terms over the same period last year.

**Table No. 2**

### **EXPORTS & IMPORTS : (US \$ Million)**

**(PROVISIONAL)**

	<b>JUNE</b>	<b>APRIL-JUNE</b>
<b>EXPORTS(including re-exports)</b>		
<b>2010-11</b>	<b>19948.18</b>	<b>54221.16</b>
<b>2011-12</b>	<b>29213.14</b>	<b>79003.74</b>
<b>%Growth2011-12/ 2010-2011</b>	<b>46.45</b>	<b>45.71</b>
<b>IMPORTS</b>		
<b>2010-11</b>	<b>25883.03</b>	<b>81202.60</b>
<b>2011-12</b>	<b>36872.49</b>	<b>110613.80</b>
<b>%Growth2011-12/ 2010-2011</b>	<b>42.46</b>	<b>36.22</b>
<b>TRADE BALANCE</b>		
<b>2010-11</b>	<b>-5934.85</b>	<b>-26981.44</b>
<b>2011-12</b>	<b>-7659.35</b>	<b>-31610.06</b>

<b>EXPORTS &amp; IMPORTS : (Rs. Crore)</b>		
<b>(PROVISIONAL)</b>	<b>JUNE</b>	<b>APRIL-JUNE</b>
<b>EXPORTS(including re-exports)</b>		
<b>2010-11</b>	<b>92892.68</b>	<b>247574.57</b>
<b>2011-12</b>	<b>131031.43</b>	<b>353338.87</b>
<b>%Growth2011-12/ 2010-2011</b>	<b>41.06</b>	<b>42.72</b>
<b>IMPORTS</b>		
<b>2010-11</b>	<b>120529.51</b>	<b>370182.12</b>
<b>2011-12</b>	<b>165386.41</b>	<b>494763.07</b>
<b>%Growth2011-12/ 2010-2011</b>	<b>37.22</b>	<b>33.65</b>
<b>TRADE BALANCE</b>		
<b>2010-11</b>	<b>-27636.83</b>	<b>-122607.55</b>
<b>2011-12</b>	<b>-34354.98</b>	<b>-141424.20</b>

**Ministry of Commerce and Industry  
Department of Commerce, Economic Division**

**Table No. 3**

**Cargo Traffic in Indian Ports (Million Tonnes)**

	<b>Major Ports</b>	<b>Non-Major Ports</b>	<b>Total</b>
<b>1950-51</b>	<b>20.01</b>	<b>2.50</b>	<b>22.51</b>
<b>1960-61</b>	<b>39.63</b>	<b>4.40</b>	<b>44.03</b>
<b>1970-71</b>	<b>58.14</b>	<b>7.90</b>	<b>66.04</b>
<b>1980-81</b>	<b>80.51</b>	<b>10.00</b>	<b>90.51</b>
<b>1990-91</b>	<b>152.85</b>	<b>12.78</b>	<b>165.63</b>
<b>2001-02</b>	<b>287.59</b>	<b>98.00</b>	<b>385.59</b>
<b>2007-08</b>	<b>519.24</b>	<b>196.38</b>	<b>715.62</b>

**Source: India Port report**

**Table No. 4**

The following table gives the detailed data about the major ports of India for the financial year 2009-10 and percentage growth over 2008-09 (Source: [Indian Ports Association](#)):

Name	Cargo Handled (2010) '000 tonnes	% Increase (over 2009)	Vessel Traffic (2009-10)	% Increase (over 2008-09)	Container Traffic (2009-10) '000 TEUs	% Increase (over 2008-09)
<u>Kolkata (Kolkata Dock System &amp; Haldia Dock Complex)</u>	46,295	-14.61%	3,462	07.50%	502	17.01%
<u>Paradip</u>	57,011	22.84%	1,531	-0.32%	4	100.00%
<u>Visakhapatnam</u>	65,501	2.49%	2,406	2.51%	98	13.65%
<u>Chennai</u>	61,057	6.20%	2,131	2.5%	1,216	6.38%
<u>Tuticorin</u>	23,787	8.07%	1,414	-7.21%	440	0.22%
<u>Cochin</u>	17,429	14.45%	872	15.19%	290	11.11%
<u>New Mangalore Port</u>	35,528	-3.17%	1,186	0.16%	31	6.89%
<u>Mormugao</u>	48,847	17.19%	465	6.89%	17	21.42%
<u>Mumbai</u>	54,543	5.14%	1,639	1.67%	58	-36.95%
<u>J.N.P.T.</u>	60,746	6.03%	3,096	4.13%	4,062	2.78%
<u>Ennore (corporate)</u>	10,703	-6.93%	273	9.2%	--	--
<b><u>Kandla</u></b>	<b>79,521</b>	<b>10.10%</b>	<b>2,776</b>	<b>10.29%</b>	<b>147</b>	<b>6.52%</b>
<b>All Indian Ports</b>	<b>560,968</b>	<b>5.74%</b>	<b>21,251</b>	<b>02.82%</b>	<b>6,865</b>	<b>4.25%</b>

## MAJOR AND INTERMEDIATE PORTS OF INDIA



## **Future of Indian Ports**

Will Indian port sector really see the emergence of private sector as a major player in the port sector in the future? Will major ports be fully corporative, and bring about greater rationalization and transparency in functioning? Are minor ports in India poised to take a lead over performance of major ports? Is there enough room for new green field port projects in Indian port sector?

Several of these questions loom large, as the Indian port sector is increasingly coming under the impact of wide ranging port reforms and private sector investments, in line with larger transformations underway in many global ports.

The development of the port sector is important to development of maritime trade is an axiom that no nation can afford to ignore in today's globalised world. This was equally true in the distant past, when maritime nations undertook extensive overseas maritime explorations and trade to set their mark on global economic history.

Needless to say, some of the world's most developed nations have also been among the most important maritime nations of the world, actively involved in global maritime trade.

India's shipping and port sector saw dramatic growth in the first four decades of post-independence, under the initiative of planned development and active government support. More than two-thirds of the port cargo handling capacity and more than half of India's national shipping tonnage were established in the first four decades of independence.

However, with a basically inward looking economic policy perspective that emphasized more on self-reliance and import-substituting development strategies, the overall trade and technology-driven growth of the economy remained constricted. However, with the paradigm shift in economic policy since early nineties, the government has sought to liberalize the port sector by opening it to private sector investments.

As a result, ports have now begun to assume a more proactive role as facilitators of trade with a range of value-added service offerings in terms of cargo handling efficiency and actively seeking to improve their performance with international ports.

### **Emerging Context for Port Reforms**

Ports as one of the important maritime institutions have continued to evolve with the changing demands of the global shipping trade and are more than just stop-over points for ships to load and unload cargo. They have indeed, emerged to be highly sophisticated and integrated systems, which provide full range of services for the shipping industry and are increasingly getting integrated into logistics value chain, which extends from origin of cargo to its final destination.

However, as the strategic business attention has focused on the dynamics of shipping and global maritime trade, the importance and changing role of seaports has not been understood till recently.

After the privatization process was extended to the port sector in United Kingdom since the eighties, the debate on public policy implications of port privatisation and the regulatory framework for the port sector has now spilled to many other countries, struggling to cope with increasing demand for investment in port infrastructure and formulating a new institutional roadmap for the port sector.

Indeed, while technological changes in seaports have begun long before the containerisation boom of early seventies, it was only during nineties following globalisation of world trade that seaports have truly began to attract broader policy level and strategic business investment attention.

Concurrently, ports all over the world, especially container cargo ports have also begun to witness fierce competition for cargo, with each port trying to gain a competitive advantage over the other. While the degree of competition still varies among different ports, there are few ports today that can ignore competition from other international ports or from ports in their immediate neighborhood.

## **1.2 IMPORTANCE OF PORTS IN ECONOMIC DEVELOPMENT**

Infrastructure is understood as an important input for industrial and overall economic development. While this is certainly true, there is no clear definition of infrastructure according to the current usage of the term in India.

As per the Economic Survey, the following sectors constitute infrastructure (**Economic Survey 2000-2001, p. 171**):

- (a) Power: Electricity generation;
- (b) Coal production;
- (c) Petroleum production: crude oil and refinery throughput;
- (d) Cement production;
- (e) Railways: Revenue-earning goods traffic and passenger kilometres;
- (f) Ports: Cargo handled at major ports;
- (g) Civil Aviation: Cargo and passengers handled at Airports Authority of India (AAI) airports;
- (h) Roads: Length of roads and length of National Highways; and
- (i) Telecommunications: New telephone connections approved

### **Importance of infrastructure on Indian economy**

In face of the global financial crisis and the economic downturn, infrastructure sector plays an important role to counter balance against slowing economic activity and lower consumption. In India the infrastructure sector currently accounts for 26.7% of India's industrial output and thus remains a useful tool to balance the economy.

Moreover infrastructure is the lifeline of any business activity, proper infrastructure increases business activity manifold. In India, out of the proposed 31,755 km by the National Highways Development Programme, completion achieved is just 28 percent or 9,165 km, even if this project is to be completed by 2012, there will be huge opportunity for companies engaged in highway building sector. Infrastructure, including roads, power, highways, airports, ports and railways, have emerged as an

asset class with long-term growth that can provide relatively stable returns to investors.

In terms of investment attractiveness in the future, the joint study has ranked power as the most sought after segment among respondents for investment in the future (83%), followed by roads and highways (72%), ports and logistics (66%), rail (45%), airports (43%) and shipping (35%). An interesting segment identified as offering a strong growth potential was urban infrastructure, especially areas such as water management, waste-water management, sewerage system and solid waste management.

The survey conclude that if government can overcome regulatory procedures, delays in project implementation and several unplanned cost escalation create then Infrastructure industry as a whole has a great potential in India.

**Table 5- Major Ports in India**

<b>Name of Port</b>	<b>Capacity (mn tonne)</b>
Kandla	77.40
Paradip	71.00
Visakhapatnam	64.00
Others	343.3
<b>Total</b>	<b>555.67</b>

Source: [www.evalueserve.com](http://www.evalueserve.com)

**Table No.6 – Key Parameters**

<b>Parameters</b>	<b>00–01</b>	<b>07–08</b>	<b>08–09 (provisional)</b>
Average turnaround time (days)	4.24	2.63	2.44
Average pre-berthing time (hours)	11.04	11.4	9.95
Average output per ship per berth day (tonne)	6,961	10,071	10,464

**Source: GMB administration report 2007-08**

**Table No.7**

Capacity Expansion Plans at Indian Ports

<b>Ports</b>	<b>Capacity in 2008–09 (mn tonne)</b>	<b>Planned Capacity by 2011–12 (mn tonne)</b>
Major Ports	555.67	1,001.8
Non-major Ports	230	NA

### **The role of economic and social infrastructure in economic development**

Infrastructures are basic essential services that should be put in place to enable development to occur. Socio-economic development can be facilitated and accelerated by the presence of social and economic infrastructures. If these facilities and services are not in place, development will be very difficult and in fact can be likened to a very scarce commodity that can only be secured at a very high price and cost.

According to the theory of unbalanced growth by Albert O. Hirschman LDC has sufficient endowment of resources as to enable it invest simultaneously in all sectors of the economy in order to achieve balanced growth. Balanced growth is a doctrine previously advanced by Rosenstein – Rodan in his 1943 article on “Problems of Industrialisation of Eastern and South-Eastern Europe” and developed by Ragnar Nurkse in his important study of Problems of Capital Formation in Underdeveloped Countries. Developing Rostow’s leading sector thesis, Hirschman maintains that “Investments in strategically selected industries or sectors of the economy will lead to new investment opportunities and so pave the way to further economic development.

### **Port Studies**

The development of seaports as an economic infrastructure assumes that like roads, communications and other economic infrastructure ports have a positive impact on the growth and development of countries. The economic history of maritime powers such as England, Spain and Portugal clearly documents the significant and critical role

which ports have played in the development of the global economy. Without ports, the Americas might not have been easily explored. Today, the United States of America is not only the leading economic global power. Uncle Sam is also a maritime technological and political superpower.

Port development has positive employment and revenue effects. The positive balance of trade and balance of payments effects of good ports and harbors cannot be denied. The beehive of activities in seaports all over the world clearly shows that ports have significant economic impact both locally, regionally and nationally.

In fact, the leading sector of a country like Singapore is the seaport. Ports have enabled Japan to build export processing zones that have turned Japan into exporters of goods which cannot be produced on the basis of country's factor endowment profile. Theoretically, seaports are an economic infrastructure with significant multiplier effects on the domestic economy.

**The United Nations Conference on Trade and Development (UNCTAD)** defines seaports as “*. . . interfaces between several modes of transport and thus, they are centres for combined transport. Furthermore, they are multi-functional markets and industrial areas, where goods are not only in transit but are also sorted, manufactured and distributed. As a matter of fact, seaports are multi-dimensional systems, which must be integrated within logistic chains to properly fulfill their functions.*

*An efficient seaport therefore, requires, besides infrastructure, superstructure and equipment, adequate connections to other transport modes, a motivated management and sufficiently qualified employees”.*

This rather long but comprehensive definition of a port captures all essential attributes of a seaport. The definition seeks to essentially emphasize that a port provides not just a single service to its customers but a multitude of services involving a wide range of operators.

**The United Nations conference on trade and development (UNCTAD)** definition also sets the benchmarks for distinguishing a modern port from many of the conventional ports, which may only provide few of the services and fall short on many others. Quite arguably, ports can be of different kinds offering some of the services but not the whole range.

The definition of port also substantially expands the scope of various infrastructure facilities that ports need to maintain to be able to offer services to their different customers. In fact, ports are themselves a crucial physical and service infrastructure for the shipping trade and economy at large; however, to be an efficient infrastructure service provider, the port establishment needs to have in place its own physical and logistics support infrastructure. These in turn determine what type of ships and commodities, a port can efficiently handle.

The kind of infrastructure that a port has or would need, would of course differ widely from port to port depending on what type of trade or cargo a port is likely to handle. While most ports perform certain common functions relating to handling of ships and cargo, each port is however, unique in terms of its location, size and importance in the national and global economy and the advantages and disadvantages that follow from it.

### **Type of Ports**

In Indian context, the classification of ports in terms of major and minor ports has been largely derived from legal enactments, such as Indian Ports Act 1908 and the Major Ports Trusts Act 1963. However, the words “major” and “minor” which seem to suggest the size of the operations of a port are somewhat misleading considering that not all “minor” ports in the country are not really minor either in size or traffic performance, nor all “major” ports are really major performers.

For instance, the two Single Buoy Moorings (SBMs) off the port of Sikka in Gujarat alone now handles one third of the total POL traffic handled in the 12 major ports. By same token, the Kolkata port, considered a “major port” has barely handled 5 million

tonnes of cargo in 2001-02, while Haldia, considered to be its satellite port handled 25 million tonnes in the same year.

It would however, be more meaningful to arrive at a broad classification of ports based on a composite parameters like location of the port along a major global trade route, the level of cargo volume handled by a port and how the primary cargo hinterland of the port is integrated into the larger national and global market.

**Leading international maritime economist Martin Stopford, in his “Maritime Economics“** offers a more meaningful and contemporary classification of ports based on the location, cargo volume and nature trade and logistics function served by a port in the national and global economy and has proposed a four-fold classification. He divides ports into four broad typologies -Local Small Ports - small and of local significance (Type 1), Large Local Ports - large but not involved in global trade (Type 2), Large Regional Ports - large port but limited to region (Type 3) and Redistribution or Transshipment Ports - large ports, wholly dependent on global trade.

### **The rural/urban scenario**

Today, the rural population of India accounts for nearly 70 per cent of the total population, and nearly half of them still live in poverty and illiteracy. How good is the rural infrastructure? The latest report of the National Sample Survey Organisation on village facilities is a revelation in itself. To quote from the report, “One fourth of our villages do not have electricity; only 18 per cent of them get tap water; 54 per cent of them are more than 5 km away from the nearest health centre; one third of them do not have pre-primary schools and 78 per cent do not have post offices”! Yes, “India still lives in its villages”.

### **The Chinese tales**

The Chinese success stories are told and retold by many. Can India set her standards by looking at China? Can one draw a parallel between those mega cities with the Indian ones, or its infrastructure development for that matter? It is debatable. However, what can be compared is the Chinese commitment. Look at their endeavours in making the Expressways. According to a recent newspaper report, when India completed 6000 km of her Expressways in six years, China had done

40,000 km within that time. Even today the Indian government endlessly debates the privatisation of airports. At least some of the analysts perceive a ‘damaging drag’ on the economy due to problems connected to infrastructure. Growth potential is dependent on the quality of performance of infrastructure to a great extent - a fact the Chinese realised much earlier than us. The fast growth of this Socialist country is extremely relevant.

### **The cost factor**

There is a cost factor involved in developing the country’s infrastructure. Funds are required and so is innovation. The government should allow private participation in this area. The political class should create an environment where investors feel confident of recovering their costs and the cost of capital. It is the country’s politics that has to decide whether “only the fools should pay for infrastructure” as in the case of our power generation.

Distribution has to be set up where it has not been successful in arresting power theft and losses. The practical solution would be allowing private players to build and manage the infrastructure and let the users pay for the costs. One successful endeavour on this front is the model city coming up near Gandhinagar, the capital of Gujarat on the Sarkhej-Gandhinagar Highway. It is being built under private entrepreneurship - something worth emulating elsewhere in the country. This model does not have to apply just to cities, but anything really. However, these decisions call for a strong political will.

### **To sum up**

The above discussion can be summarized under the following list of do’s and don’ts. Although this is not exhaustive, it would certainly pave the way for faster development of infrastructure.

- (i) Have a proper vision for growth
- (ii) Plan for the long-term
- (iii) Have commitment and show political will
- (iv) Give innovative ideas a chance
- (v) Remove unnecessary controls and roadblocks

- (vi) Boost investors' confidence
- (vii) Make human capital productive
- (viii) Leave all doors open so that corruption is kept away
- (ix) Spread the value of education and make it compulsory
- (x) Review and adjust the demand / supply position of infrastructure from time to time.

The country's economy has spread its wings. However, for it to truly take off, the country has to improve infrastructure. One can speed up the process, by revising, revisiting and upgrading the development plans with a long-term view. Yes, one has to firmly believe that reforms are the pre-requisite for growth and reforming infrastructure sustains growth. Who does not want to see a double-digit growth rate of the GDP in the near future?

### **1.3 Importance of Ports in India**

India has nearly 7517 kms long coastline and presently has 12 major ports (of which 11 are operational and the 12th is under construction). There are 148 minor ports of which only 30 handle cargo. 95% of India's foreign trade by weight/volume and about 70% by value involve transportation by sea.

During the first 25 years after independence, aggregate traffic grew modestly from 20 million tonnes in 1950 to 67 million tonnes in 1975, the main commodities handled being crude oil and iron ore. However, following the liberalisation and opening up of the economy in the early 90s, there has been a significant increase in India's maritime trade. Containerisation of general cargo, which came, late in India in comparison with other Asian economies, has also shown a steady increase and is currently around 10% of all traffic in major ports.

**Table No.8**

**Comparative Performance of Major and Minor Ports (Traffic in MMT)**

No.	Port	2003-04	2004-05	2005-06	2006-07	2007-08
1	Major	344.54	383.62	423.41	463.84	519.24
2	Minor	115.32	127.09	145.53	181.11	196.38
	Total	459.86	510.71	568.94	644.95	715.62
3	Share of Major Ports	75%	75%	75%	72.95%	72.55%
4	Share of Minor Ports	25%	25%	25%	27.05%	27.45%

**Source: GMB administration report 2007-08**

**Structure of Ports in India and governing legislation**

**Major ports**

In India, the major ports are placed under the Union list of the Indian Constitution, and are administered under the Indian Ports Act, 1908 and the Major Port Trust Act, 1963 by the Government of India. Under the Major Port Trust Act, each major port is governed by a Board of Trustees appointed by the Government of India; their composition gives dominance to public enterprises and government departments. The powers of the trustees are limited and they are bound by directions on policy matters and orders from the Government of India.

**Minor Ports**

Minor ports are placed in the Concurrent list of the Constitution and are administered under the Indian ports Act, 1908. The Act defines the jurisdiction of Central and State government over ports. It lays down rules for safety of shipping and conservation of ports. It regulates matters pertaining to the administration of port dues, pilotage fees and other charges.

At the State level, the department incharge of ports or the State Maritime board (created through State legislation as in case of Gujarat), is responsible for formulation of water front development policies and plans, regulating and overseeing the

management of state ports, attracting private investment in the development of state ports, enforcing environmental protection standards etc. Maritime boards have so far been constituted only in Gujarat, Maharashtra and Tamil Nadu.

### **Capacity constraints**

The major ports handled traffic of about 250 million tonnes in 1998-99 as against an assessed capacity of about 220 million tonnes. The overall capacity utilization for all the major ports was about 115% which indicates that the major ports were handling traffic in excess of capacity. As a result, in India ships have to wait for berths instead of berths having to wait for ships. Port traffic has been projected to grow to a level of 650 million tonnes by 2006.

### **Poor Performance**

The productivity in Indian ports is poor as compared to other ports in the region as discussed below.

Vessel turn around time

The average vessel around time for Indian ports varies from 3.3 days to 8.3 days as compared to 15 to 35 hours in major European ports and less than a day in Singapore.

### **Equipment utilisation**

The average availability of equipment in Indian ports is around 70% as compared to 85%-90% for other Asian ports. (World Bank, 1995). The number of containers handled per ship/ hr is 10 at JNPT port which is India's most modern container terminal, as compared to 30 in Colombo and 69 in Singapore respectively. While, efficiencies have improved since 1995, productivity of Indian Ports is still below international standards.

### **Labour productivity**

On an average, Indian ports handled around 1424 tonnes of cargo/ employee in 1998-99. In comparison ports in U.K. handled around 47,000 tonnes of cargo per employee in 1997-98. The port of Rotterdam handled around 50,500 tonnes of cargo / employee during 1998-99. Manning scales at different ports for specific activities such as container handling and stuffing vary widely. For example, for transfer of containers from ships to quay Calcutta port employs a total of 32 persons as against 12 at haldia,

15 at Mumbai, 21 at Chennai and 4 at JNPT. Again for container stuffing/destuffing, Calcutta and Mumbai employs 28 persons, Chennai 7 and Haldia 2 for unitised and 7 for non unitised cargo. Such large manning scales result in excessive transaction and manning costs, again making Indian ports highly uncompetitive.

**The main factors that have led to inefficiencies in the Indian ports are:**

- Most major ports were originally designed to handle specific categories of cargo which have declined in time while other types of cargoes gained importance. The ports have not been able to adjust to the categories of cargo which grew the most. There are thus several berths for traditional cargo, which are under-utilised, and only a few for new cargo, which are overutilised.
- Equipment utilisation is very poor both because equipment is obsolete and poorly maintained.
- Over staffing at Indian ports remains rampant and productivity indicators in respect of cargo and equipment handling continue to be poor.
- Documentary procedures relating to cargo handling such as customs clearance requirements are unduly complicated and time consuming. Electronic document processing is still to be introduced in all the ports.
- Port access facilities and arrangements for moving inbound and outbound cargo are inadequate and unsatisfactory.

Absence of inter-port and intra-port competition which have been conducive to substantial productivity increases in other countries is absent in Indian due to poor inland connectivity and a policy regime that protected domestic ports against competitive pressures.

The consequences of these various shortcomings for the Indian economy are severe. Few large liner ships are willing to call on Indian ports as they cannot afford to accept

the long waiting times. Indian container cargo is transshipped in Colombo, Dubai or Singapore resulting in additional costs and transit times.

As a result the Indian exporter is not in a position to avail of “fixed-day-of-the week” services offered by the liner industry at a time when manufacturing and trading companies abroad are increasingly selling and buying on a “just-in-time” basis. Indian exporters are, therefore, operating on the basis of substantial buffer stocks which also make them less competitive.

It has been estimated that the annual incidence of these various factors such as demurrage charges, transshipment costs, pre-berthing delays and vessel turn around time could be as high as US \$ 1.5 billion per annum. These costs have ultimately to borne by the end user, raising the costs of India’s exports in international markets and the prices of imports for the Indian economy.

Ports are no longer mere modal interfaces between surface transport and sea transport. They are now logistics and distribution platforms in the supply chain network. International trade has now become transport intensive and time sensitive and Indian ports clearly are not yet ready for this changing environment. There is, therefore, an urgent need to restructure the port sector in order to improve efficiencies and reduce costs.

### **Models for port structuring**

There are basically three types of port operating structures:

1. Service ports
2. Tool ports
3. Landlord ports

### **Service Port**

The Port Authority provides all commercial services to ships and cargo, owns and operates every port asset, and fulfils all regulatory functions; the Service Port Authority can be either a public entity, as used to be in former socialist countries, and in Singapore, or a private one, as is the case in Felixstowe (United Kingdom), or Hong Kong. Since both Singapore and Hong Kong are outstanding references as far

as productivity of port services are concerned, this could suggest that to some extent, ownership could be a secondary matter.

However, the Service Port experience in former centralized economies clearly demonstrated its shortcomings, and the former Port of Singapore Authority was turned in 1997 into PSA Corporation, a port operating company, while regulatory powers were vested into the newly created Maritime and Port Authority (MPA).

### **Tool Port**

The Port Authority owns the infrastructure, the superstructure and heavy equipment, rents it to operators which carry out commercial operations, and retains all regulatory functions.

### **Landlord Port**

The Port Authority owns the basic infrastructure only, land and access and assets, and leases them out to operators, mostly on a long-term concession basis, while retaining all regulatory functions. Some of the examples of landlord ports are Rotterdam (Netherlands), Buenos Aires (Argentina), or Laem Chabang (Thailand).

The Landlord Port and Tool Port Authority are usually public bodies, owning the land and related assets on behalf of the Government, while the commercial operators leasing the facilities or renting the superstructure and equipment are private companies.

## **1.4 History of Ports in India**

Maritime history is associated with the activities related to the oceans and seas. Maritime history of India is enormous and comprehends several eras, right from the ancient times till date. Maritime history of India has been influenced largely by the different political activities and has been really imperative in the development of trade uplifting the economy of the country.

Sea routes were indeed substantial as they supplied the means of business with foreign countries and establishing contacts with the foreign states in ancient and

medieval times. Indian maritime history traces the advent of the Portuguese to the coasts of India and the activities that resulted in this influx of foreigners to a land of great resources and wealth.

Maritime history of India commences from the 3rd millennium BC, when the citizens of the Indus Valley set into motion trading with Mesopotamia. Roman history states about an amplification in Roman trade with India following the Roman annexation of Egypt. By the period of Augustus, near about 120 ships were setting sail every year to India. Indians made their presence felt in Alexandria and the Christian and Jew settlers from Rome continued to live in India long after the fall of the Roman Empire.

As trade relations between India and the Greco-Roman world amounted to larger degrees, spices became the main import from India to the Western world, leaving behind silk and other commodities. Indian commercial connection with South East Asia testified crucial to the merchants of Arabia and Persia during the 7th and 8th century.

On the orders of Manuel I of Portugal, four vessels under the domination of navigator Vasco da Gama winded the Cape of Good Hope, continuing to the eastern coast of Africa to Malindi to sail across the Indian Ocean to Calicut (present day Kozhikode, Kerala). Indian and oriental treasures were now exposed to the Europeans to explore. The Portuguese Empire was one of the earliest European empires to grow from spice trade.

The world's first tidal dock is believed to have been built at Lothal around 2300 B.C. during the Harappan civilisation, near the present day Mangrol harbour on the Gujarat coast. Sea gained a prominent position with time and maritime activities began to grow with the different conquests. With various invasions, the water-bodies came under the developmental procedures that they undertook as a means of fulfilling their own motives. Like, north- west India came under the influence of Alexander the great, who built a harbour at Patala and his army returned to Mesopotamia in ships built in Sindh. Similarly other kings from different dynasties like Maurya, Chola, Satavahanas etc. also contributed immensely to the Indian maritime history.

Being surrounded on the three sides by water bodies India is in an advantageous position in terms of trade practises at home and abroad. Without proper navigational skills this achievement would not have been possible, two famous Indian astronomers, Aryabhata and Varahamihira, helped in this regard by mapping the positions of celestial bodies, and developing a method of computing a ship`s position from the stars.

Naval expeditions, which occupied parts of Burma, Malaya and Sumatra, while suppressing the piratical activities of the Sumatra warlords, were also carried out from India in 984-1042 AD by the Chola kings. Indian maritime history mentions the sudden disappearance of the maritime power when the Portuguese arrived in India because they imposed a system of license for trade.

Again the late seventeenth century, there is witnessed a notable revival of maritime activities with the alliance of Siddhis of Janjira allied and the Mughals. Indian shipbuilders continued to hold their own well into the nineteenth century in spite of the British domination. The Bombay Dock completed in July 1735 is still in use even today.

The significant aspects of the Indian maritime historical tradition from the days of ancient India render an astonishing panorama. Starting from the Indus Valley Civilization, Indian maritime history even surpasses western civilization in its origin. A myth had always overridden that the white man was a great adventurer and a superior being, who was invincible and could conquer many nations across the vast oceans.

The Portuguese were pawns under the Europeans in maritime India. Having entrenched themselves along the coast, the Portuguese realised soon enough that they could not expand into interior India. Portugal did not have the resources, human and material for that. Once the futility of it all became ostensible, the Portuguese abandoned their mission in favour of remaining put in their tiny enclaves on the west coast until the time came for India to reclaim them. The encounter, which followed with western and northern Europe is a most significant interregnum in the long and chequered history of maritime India which begins with the Indus Civilization.

Indians feared the sea as a result of which they remained a land bound people, despite their blessed maritime situation. Their sights have been fixed firmly towards the north, the northern passes which were the geneses of so much Indian history. The last of the conquerors of India came by sea, established their footholds along the coasts before expanding inland.

There is, however, evidence available that ancient Indian crews did cross the Arabian Sea and Bay of Bengal to the opposite shores of Indian Ocean in large numbers and in gigantic ships that were indigenously built. Many of the Indian built ships were legendary in history. The reason behind it can be attributed to Indian teak, which was a superior timber to the European oak.

Growth of maritime power of southern India in Indian history in this regard was significant. The Cholas exploited their maritime strength and nurtured overseas territorial ambitions. In this context of Indian maritime history, the geography of north Indian Ocean played an important role in making the people of the littoral seek the sea for trade and economic gain.

The chief sea lanes of the north Indian Ocean served as conduits of trans-continental as well as inter-regional trade. Since the parallel silk route was too crowded, the emphasis shifted toward the seas.

Modern India is very much keeping its maritime traditions alive, a tradition of navigation and seamanship skills, of shipbuilding and innovation, which the sea-friendly civilization of Mohenjodaro and Harappa had displayed. Maritime history of India first had its seeds planted during this highly knowledgeable civilization.

The Indus Valley refinement did survive through the ages, as shown in Rig Veda and Arthashastra, till the Kalingas, Cholas and the Andhras. The history of the Indian Ocean and India's involvement in trade and commerce since times immemorial is the fundamental governing fact under Indian maritime history. This exactly demonstrates how active this area was long before the now developed world.

Thriving trade existed in 2400 B.C. between the Indus valley and Mesopotamia. The dock at Lothal established the seafaring capabilities of the Harappans. Indians had already sailed through the Indian Ocean long before the Arabs, Egyptians and the Greeks. The monsoon winds enabled India to be at the centre of the trading network between the East and the West.

The Chinese had started trading with Calicut (present day Kozhikode, Kerala) in the seventh century A.D. A benign Indian influence grew in Southeast Asia and blended with culture and religion. Till the end of tenth century, Sri Vijaya kingdom ruled the ocean, when the Cholas challenged their supremacy. Hindu sea power finally came to an end in the fourteenth century with the downfall of the Sri Vijaya Empire.

The advent of the Portuguese followed. The Zamorins and the Marrakkars resisted but their navy, being coastal in nature could not match the Portuguese. The exploits of Kunjali admirals and later of Kanhoji Angre are a legend for passing years.

Geographically India lies across the major Sea Lanes of Communication (SLOC) in the Indian Ocean, which lends it a considerable strategic importance and potential. In the long history of India's links with South-East Asia, the South-East Asian empire of the Sri Vijayas is a remarkable chapter.

The city of Vijaynagar was a teeming marketplace for both exports and imports. Indian maritime history comprises the extensive dealings with foreign places, which even have a mention in the Bible and by Sappho. South India was along the trade routes for the export of spices like cinnamon and cassia which originated from China and south East Asia.

During the Sultanate period, everyday usable articles as well as luxury articles were exported to Syria, Arabia and Persia from Bengal and Cambay. These included silks, exquisitely designed clay pots and pans, gold-embroidered cloth caps, knives, guns, and scissors. Other major things of export were indigo, sugar, oils, ivory sandalwood, diamonds, spices, other precious gems and coconuts. East Africa, Malaya, China and the Far East were the places where things were exported. Arab traders shipped Indian

goods to European countries through the Red Sea and the Mediterranean ports. Indian textiles were in great demand in China.

Chandragupta was the founder of the Mauryan Empire, ruling from 324 to 301 B.C. He along with the help of Chanakya (Kautilya) destroyed the Nanda rulers of Magadha and established the Mauryan Empire. After this the expansion continued with Punjab, Kabul, Khandahar, Gandhara and Persia from Seluces. Indian maritime history was much affected by the rise of the Mauryan kingdom. Indian maritime history has the reference of the first organisation of ships in the Mauryan Empire.

Chandragupta's reign was fraught with Roman connections and victories which necessitated brisk trade developments. Kautilya in the cases of navigation and seafaring guided him as well. In his much celebrated work, Kautilya included a whole chapter on the state department of waterways under `navadhyaksha` which after translated, means `superintendent of ships`.

Chandragupta Maurya established an admiralty division under a Superintendent of ships as part of his war office, with a charter including responsibility for navigation on the seas, oceans, lakes and rivers.

Mauryan Empire encouraged extensive maritime activities which helped in the boom of trade practices in the south. This expansion in the south was especially under Bindusara, whereas Chandragupta had expanded the territories to the northern side. Plenty of availability of pepper and other spices, the navigability of the rivers connecting the high mountains with the seas and the discovery of favourable trade winds which carried sailing ships precipitated overseas trading. Exports generally included silk goods and textiles, spices and exotic foods. The Empire was enriched further with an exchange of scientific knowledge and technology with Europe and West Asia.

The Cholas were a Tamil dynasty that ruled the south of India till the 13th century. Indian maritime history records extensive overseas venture in the south of India under the Chola dynasty. The Cholas encouraged sea trade by developing harbours and providing quarters, warehouses and workshops for Roman sailors and merchants.

Trading relations in the south were improved and they had long trading correspondence with the west through trans-shipments at the Northern ports.

Navigational facilities were provided in the ports, which included repair yards, pilotage, wharfs, and even light houses. Malays and Indonesians participated in the growing exchange when the voyages between India and South east Asia became frequent. Muzirs, Poduca, and Sapatma were the important trading ports. Raja Rajendra was a powerful of the Chola dynasty in the 10th century, who knew the great importance of foreign trade and built a powerful navy meant for trade and war.

The Chola dynasty no doubt helped to enhance the maritime activity which has contributed to the Indian maritime history. It was the failure of the Mughals to appreciate the magnitude of sea power that led to the subjugation of India by the British, which ended two hundred years later.

There was a huge scope of maritime development that took place from the beginning of the civilization prior to the western accomplishments. Tracing Indian maritime history, one comes across the extent of progress that was being made in this field, which aided in the development of trade and commerce in the country.

Indian maritime history spans a huge era of seafaring, which is impressive till today, where one can still find its evidence, and is a part of the heritage. Maratha Navy also had participated hugely in Indian maritime history under Shivaji Bhonsle and Kanhoji Angre, which however did decline under Nanasahab's rule. It was then that the British East India Company took over the maritime business in early 17th century, with shipping of spices.

Britain's Royal Navy had full control of the Indian navy section in early 19th century, which had participated jointly in First World War. Indian ship-builders however did weaken under British supremacy, building some legendary vessels at the Bombay Dockyard.

Tracing down historical lines, the Andaman and Nicobar Islands were a significant bunch of islands, contributing much to Indian maritime history. Its history from the

early period till the eighteenth century and thereafter under the British rule till independence of India are legendary in today's ages. These islands had a strategic importance, which was realised by the Cholas and even Sri Vijaya rulers.

There has been reference to these islands by the ancient sea voyagers of many countries including the Indians, Europeans, Arabs and the Chinese. Most of them, however, left these islands alone.

Only in 1789 did the British make the first attempt to establish a settlement in the harbour now known as Port Blair. They were given a hostile reception by the locals and withdrew. It was after the Sepoy Mutiny in 1857 that the British found these islands to be ideally suited for a penal colony to hold the freedom fighters; something they continued to do till 1938.

Post Indian independence in 1947, the Republic of India's navy consisted of 33 vessels and 538 officers to safe-lock a coastline stretching more than 4660 miles (7500 km) and 1280 islands. To add further to the rich Indian maritime history, the Indian Navy conducted annual Joint Exercises with other Commonwealth naval forces all through the 1950s.

The navy wing witnessed severe action during several of the country's wars, including Indian consolidation of Junagadh, the freedom of Goa, the 1965 and 1971 wars. After the ensuing commotion in receiving spare parts from the Soviet Union, India also went ahead in its gigantic indigenous naval designing and production programme, aimed at manufacturing destroyers, frigates, corvettes and submarines.

Maritime history of India assimilated within itself the Coast Guard Act, which was passed in August 1978. The India Coast Guard took part in Operation Cactus in Sri Lanka among other anti-terrorist operations. The Indian navy was also commissioned in numerous United Nations peacekeeping missions.

The proud Indian navy also repatriated Indian nationals from Kuwait during the first Gulf War. The Kargil-Drass War in 1999 happened as a major turning point in maritime Indian history, placing Navy under direct international brilliance scanner. As

a consequence of the escalating strategic ties with the western world, Indian navy has conducted joint naval exercises with its western counterparts, including the United States Navy. Bettered relations with the United States of America and Israel have led to joint patrolling of the Straits of Malacca.

Besides the military sections, maritime history has also made giant strides in its civil sailing section, with the top ports bringing in bulk profits for Indian administration. Some of the hi-tech and sophisticated ports in India comprise: Paradip, Visakhapatnam, Chennai, Cochin, New Mangalor Port, Mormugao, Mumbai, J.N.P.T., Ennore and Kandla.

## **1.5 Global Scenario**

### **Global Trade and Container Traffic**

More than 90% of world merchandise trade is carried by sea and over 50% of that volume is containerised. In today's era of globalisation, international trade has evolved to the level where almost no nation can be self-sufficient and global trade has fostered an interdependency and inter-connectivity between countries. Shipping has always provided the most cost-effective means of transportation over long distances and containerisation has played a crucial role in world maritime transport.

### **Global trade drives containerisation**

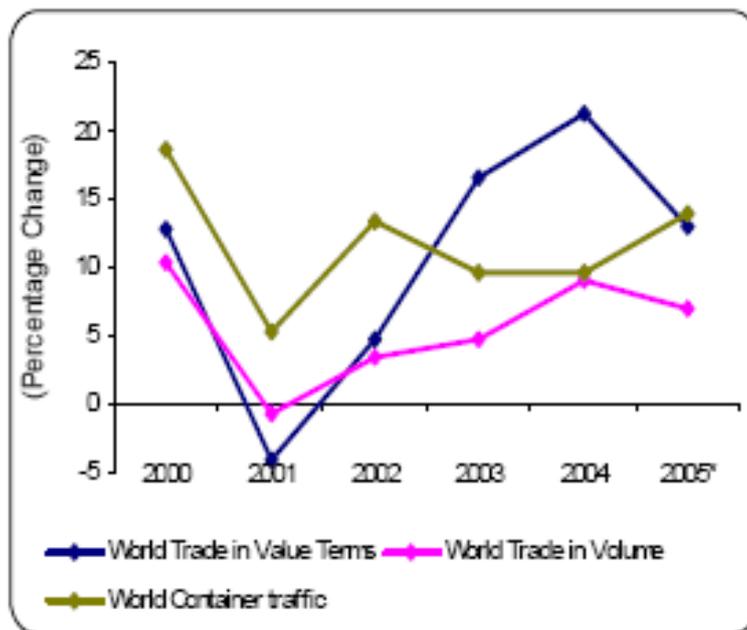
Global merchandise trade has been growing at compound annual growth rate (CAGR) 10.3% (value terms) during 2001-2005, which was the highest average growth rate of world merchandise trade in the last three to four decades. The high merchandise trade has pushed container traffic worldwide. In 2005, it is estimated that world merchandise trade has witnessed an excellent growth rate of 13% in volume terms and container traffic has registered an estimated growth rate of 13.89%. Containerisation accounts for over 50% of world merchandise trade and is expected to go up further.

During 2001-2005, world container traffic has increased at CAGR 9.2%. Liberalisation of international trade and globalisation has contributed significantly towards this robust world trade, which in turn increased the container traffic.

Moreover, the strong world economic growth has also increased the momentum of world merchandise trade.

Development of information and technological progress also attributed to the rapid growth of global container traffic by prompting trading prospects, particularly the movement of highly perishable goods.

**Chart 1: World Merchandise Trade and Container Traffic Growth**

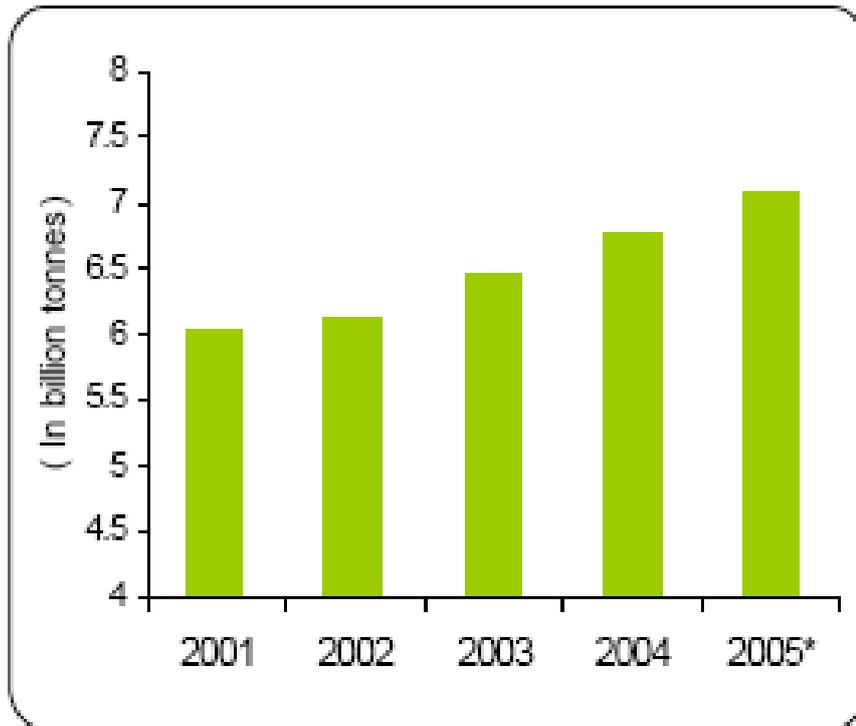


*Source: WTO, Cygnus Research*  
*\*2005- Estimated*

**World seaborne trade registered 4.76% growth rate in 2005**

In 2005, world seaborne has increased strongly and is estimated to have reached 7.08 billion tonnes, registering a growth rate of 4.76%. Dry cargo accounts for about 66% of total seaborne trade, while remaining 34% is by tanker cargo. Asia contributes the largest share of world seaborne trade with 38.4%, while Europe contributes about 23%; North America contributes 21.4%, Africa 8.6% and others 8.6%.

**Chart 2: International Seaborne Trade  
(Goods Loaded)**

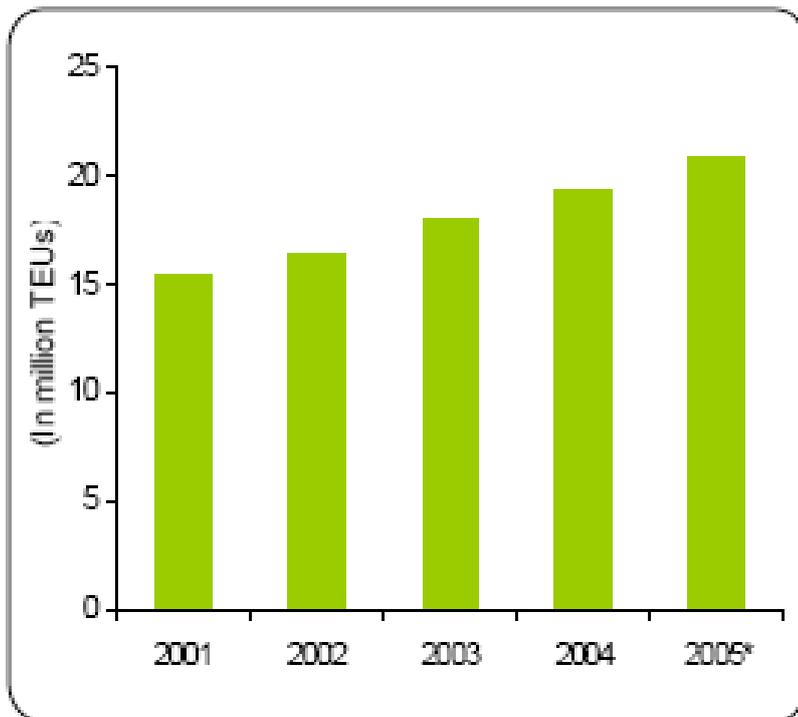


*Source: UNCTAD & Cygnus Research*

Robust growth in world containerisation has driven the number of container fleet worldwide in the last couple of years. In 2005, the container fleet has witnessed an estimated growth rate of around 7.7% to around 20.8m TEUs. The fleet ownership is split between container lessors and sea carriers.

In 2005, the container fleet owned by sea carriers accounted for around 55% of total world container fleet and the remaining by the lessor's fleet. In 2005, fleet owned by lessors had registered a growth rate of 7.1%, while fleet owned by sea carriers registered 8.1%. In 2002 and 2003, lessors increased the size of their container fleets at a faster rate than the sea carriers, but in 2004 and 2005, lessors were more cautious due to the rise in box prices. In 2004, prices of dry freight containers increased by over 50% due to the rising prices of steel and timber.

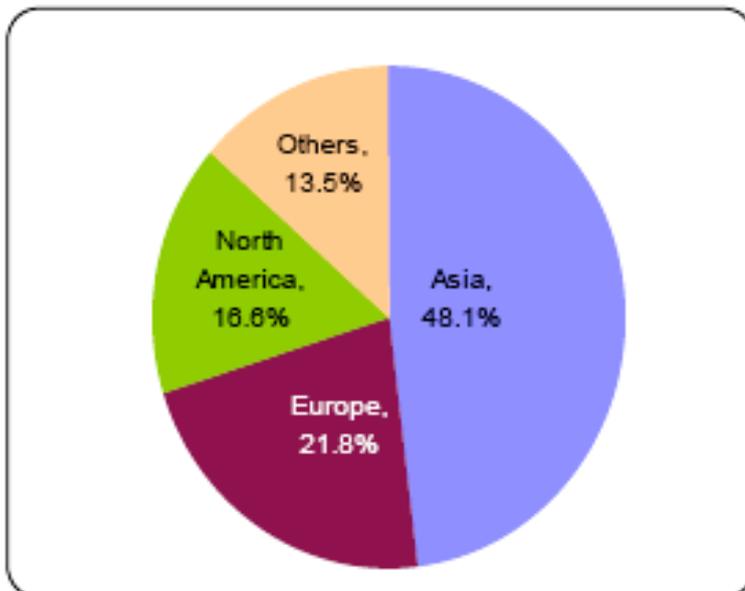
**Chart No.3**



*Source: UNCTAD & Cygnus Research*  
*\*2005 Estimated*

**Asia accounts for highest container traffic in the world**

**Chart No.4**



*Source: Drewry Consultant & Cygnus Research*

Asia region has emerged as a major hub with around 48.1% share of world container traffic. Burgeoning trade growth in China and India has played a pivotal role in Asia's dominance of container trade in the world.

Some of the factors that are instrumental in Asia's contribution towards world container traffic are: sound medium to long term growth prospect in Asian countries; regional free trade agreements such as ASEAN's Common Effective Preferential Tariff Scheme and very close relationship among number of economies at different levels. In addition the increase in the rate of FDI inflows in the region has fuelled containerisation in the region. This reflects improved economic performance and greater acceptance of containerisations in the region.

**HPH accounted for 26% of world container traffic:**

The increased opportunities in the private investment in the port sector have influenced international port operations. Hutchison Port Holding (HPH) accounted for 26% of world container port capacity with container throughput of around 48m TEUs in 2004. Hong Kong, the original stronghold of HPH, has wide range of investments in the Chinese mainland and other regions such as Middle East, Africa, Americas, Asia and Europe.

**Far East region will constitute lion's share of global container traffic**

Far East region will drive the global container traffic. The contribution of Far East region to global container traffic is expected to reach 40% in 2009 from 36% in 2004. Booming trade in the region, particularly countries like China, Japan, South Korea and Singapore will push global container traffic. It is estimated that container trade volumes on the East-West routes will increase at an average 7.5% per annum from 2006 to 2009. The biggest deep sea liner route is the trans-pacific trade between Asia and North America, which will play a crucial role in Far East region's dominance in the global container traffic movements.

**Container traffic expanding 20 per cent annually in India**

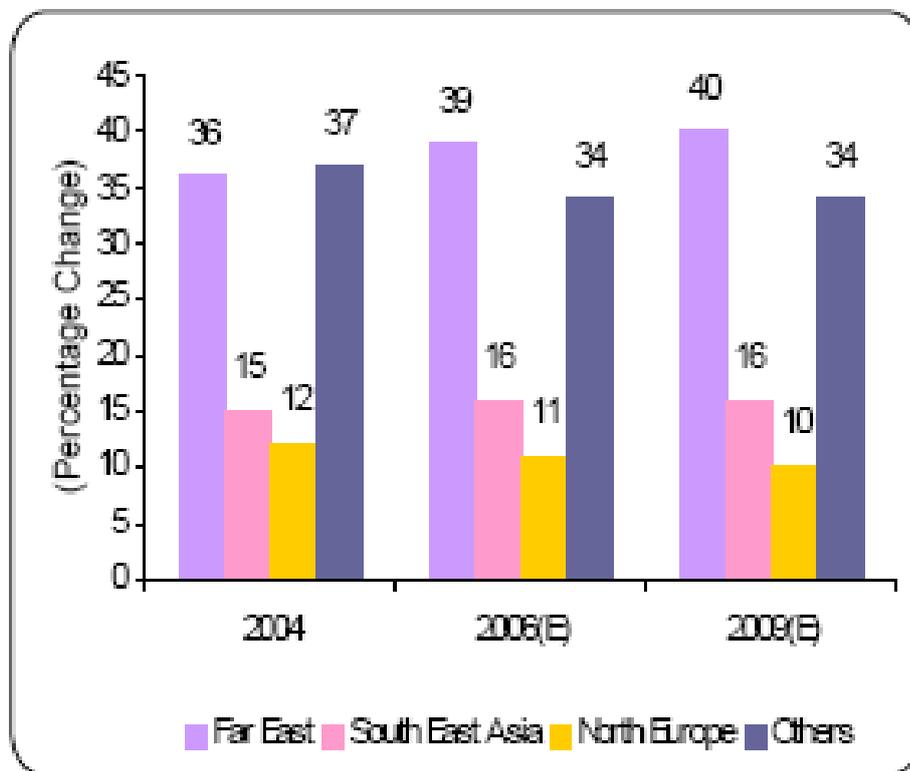
The container business in India is growing at a brisk clip, as importers and exporters are increasingly shifting away from general cargo. Containerised traffic is growing by

almost 20 per cent annually, nearly double the global average. Container traffic is expected to double to 110 million tonnes in just less than five years.

According to Sabyasachi Hajara, chairman, Shipping Corporation of India (SCI), the container business is expected to grow at an average rate of 18 per cent in the next decade.

Major Indian ports currently handle container vessels with a capacity of 9,000 TEUs (twenty foot-equivalent units), but this is likely to go up to vessels with a capacity of 13,000 TEUs shortly.

**Chart No.5**



*Source: Drewry Consultant & Cygnus Research*