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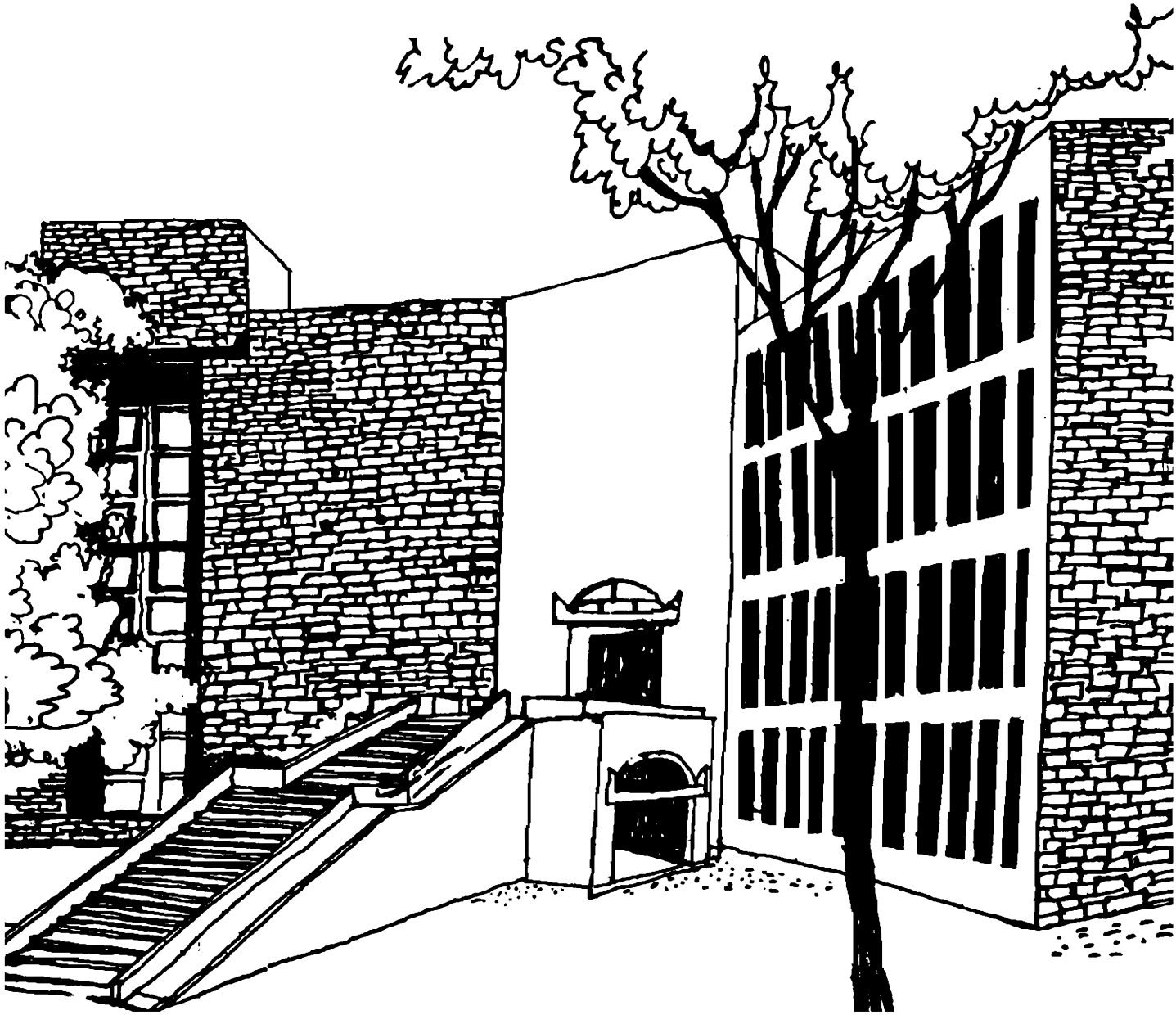

COASTAL SHIPPING: SCOPE OF INTEGRATING WITH THE NATIONAL TRANSPORT NETWORK

By

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1. Introduction

1.1 Coastal shipping constitutes about 30% of the total traffic handled at our ports. Exhibit 1 gives data for the past two years for the major ports, the Gujarat Maritime Board (GMB) ports, and the non-GMB minor and intermediate ports. We see that the total coastal traffic for 1998-99 was 87.4 million tonnes (mt). Out of this, 75.8 mt (86.7%) was handled in the major ports, 6.4 mt (7.3%) was handled in the GMB ports and the rest 5.2 mt (5.9%) in the non-GMB minor and intermediate ports.

	1998-99	
Port	**Coastal Traffic (mt)**	**%**
Major Ports	75.8	86.7
GMB Ports	6.4	7.3
Non-GMB Minor and Intermediate Ports	5.2	5.9
Total	87.4	100.0

1.2 The time series data for major, and minor and intermediate ports of overseas, coastal and total cargo, split as unloaded, loaded and transhipment is given decadally from 1960-61 till 1990-91 and annually till 1998-99 in exhibit 2.

We see in exhibit 2 that for major ports in 1960-61, coastal traffic constituted a similar share (27%) as now, but fell to about 15% until 1980-81, primarily due to the growth in overseas traffic. In the 80's, coastal traffic grew rapidly to regain about 33% share, which has declined marginally during the 90's. The compounded annual growth rate over the past 8 years (between 1990-91 to 1998-99) had been nearly 5.6% (the growth actually occurred in spurts in 1994-95 and 1997-98). This was less than the growth in total port traffic at 6.5% for the same period.

For minor and intermediate ports, coastal traffic constituted over 50% of the total traffic in 1960-61, and then fell to around 30% since 1970-71. The variance around the 30% share has been significant, primarily because the total volumes are small. The compounded annual growth rate over the past 8 years (between 1990-91 to 1998-99) had been nearly 17.3% (the growth actually occurred in spurts in 1994-95, 1996-97 and 1998-99). To that extent, the share of minor and intermediate ports (including GMB ports) out of the total coastal traffic has gone up from 6.1% to 13.2%.

1.3 As seen in exhibit 1, for the all India traffic, the coastal tonnage which is unloaded is greater than what is loaded, for the years 1997-98 and 1998-99. The difference could be accounted for by year end data capture issues. Data inaccuracies could also be a reason [*data limitation 1*].

1.4 It is interesting to note from exhibit 1 that for major ports in 1998-99, the share of coastal cargo for unloading (26%) is lesser than the share for loading (37%), even though for the absolute tonnage it is the reverse. This is simply due to the fact that our total cargo has a significantly greater overseas import component than export.

For the non-GMB minor and intermediate ports, we can not interpret the shares since the volumes are small.

1.5 As seen in exhibit 3, passenger traffic is more in the minor and intermediate ports than in the major ports. It is further evident that most of the passengers are coastal. The importance of passenger traffic is for short hauls near the ports and, to and between the offshore islands of the Union Territories of Andaman & Nicobar, and Lakshadweep. Tourism based coastal passenger traffic could have potential. As such, for coastal movement, the commercial potential of passenger traffic is not high compared to freight traffic at ports. For further discussion, we focus on freight traffic.

1.6 *At the 1998-99 level of total port traffic of 288 mt, the coastal traffic was 87.4 mt.* Out of this, we know that 3.9 mt was the transhipment cargo (exhibit 1) in the major ports, primarily at Visakhapatnam (exhibit 4). GMB ports and the non-GMB minor and intermediate ports report nil transhipment, raising a doubt as to whether it is a classification issue [*data limitation 2*]. *The total originating traffic during 1998-99 was 37.3 mt*, subject to data limitation 1.

We try to estimate the tonne kms (tkms) of coastal movement. The average traffic moved during the year is taken as 41 mt (average of unloaded and loaded traffic). Over 70% consisted of thermal coal and POL, whose average coastal lead had been estimated as 1,600 kms [Raghuram and Chaudhary, 1994]. *Assuming a lead of 1,600 kms for all the coastal traffic, the total tkms would be 65.6 billion.* The corresponding figure for Indian Railways was about 284 btkms (1998-99), which is 40% of the rail-road share. *The total land movement was* thus *710 btkms and the total domestic movement (including coastal) about 775.6 btkms. Thus coastal movement has a market share of 8.5% of the domestic movement.* (Pipeline and inland water transport are not considered here. While inland water transport is insignificant, pipeline is a growing mode of freight movement).

1.7 Examining the data port wise from exhibit 4, we see that the share of coastal cargo varies across ports, and within ports between unloading and loading. For eg. in 1998-99, Paradip, Chennai and Tuticorn had more than 50% of their cargo as coastal while Mormugao and JNPT had less than 8%. Haldia had 89% of its loaded cargo as coastal, while only 3.2% of unloaded cargo was coastal. Chennai had 7.6% of its loaded cargo as coastal, while 67.9% of its unloaded cargo was coastal (We expand upon the loading and unloading shares in sections 2.2 and 2.3 respectively). Thus the significance of coastal cargo as a business varies across ports and would be important in determining the interest of a port in servicing coastal traffic.

		1998-99	
Sr No	**Port**	**% Share of Coastal Cargo to Total Cargo of each Port**	**Coastal Cargo (mt)**
	Major Ports		
1	Paradip	59.7	7.8
2	Chennai	51.1	18.0
3	Tuticorin	51.0	5.2
4	Cochin	42.2	5.3
5	Visakhapatnam	36.9	13.1
6	Haldia	31.3	6.3
7	Mumbai	27.0	8.3
8	Calcutta	25.7	2.3
9	New Mangalore	17.7	2.5
10	Kandla	12.3	5.0
11	JNPT	7.8	0.9
12	Mormugao	5.0	0.9
	Total Major Ports	30.1	75.8
	GMB Ports		
1	Mul-Dwarka	58.8	1.2
2	Magdalla	42.7	3.8
3	Jafrabad	20.9	0.6
4	Other GMB Ports	6.8	0.7
	Total GMB Ports	25.4	6.4
	Non-GMB Minor and Intermediate Ports	48.6	5.2
	All India Traffic	30.4	87.4

The hinterland of the port, the volume of cargo, and the multimodal and port infrastructure play a significant role in determining the port traffic. We elaborate this in sections 2.2 and 2.3, and 3.1 to 3.4 below.

1.8 It has always been felt both by the industry and the policy makers that the scope of coastal shipping has been under exploited in India, especially since we have over 6,000 kms of coastline, catering to the direction of significant flows of traffic. Further, *coastal shipping is more environment friendly (we do not even seek to justify it), less expensive and with the potential of relieving congestion on land transport.* (The market share of coastal shipping and inland water transport in the United States is nearly 40% of the tkm freight movement). Historical reasons for lack of exploiting coastal shipping have been many and varied, including that the industrial revolution never came to India. Today's reasons are primarily infrastructural and regulatory. It is thus important to examine what can be done now to increase the use of coastal shipping, by integrating it with the rest of the transportation system.

2. Coastal Traffic Profile

2.1 Cargo-wise coastal movement data is available for 1997-98 from the Basic Port Statistics of India, 1998-99. Out of the 37.6 mt of originating coastal traffic during 1997-98, 14.2 mt was accounted for by thermal coal, 8.6 mt by POL crude, 8.4 mt by POL product, 2.9 mt by iron ore and pellets, 0.8 mt by cement and 0.7 mt by clinker.

		1998-99
Sr No	Commodity	Quantity (mt)
1	Thermal Coal	14.2
2	POL Crude	8.6
3	POL Product	8.4
4	Iron Ore and Pellets	2.9
5	Cement	0.8
6	Clinker	0.7
7	Others	2.0
	Total	37.6

2.2 In terms of loading share, the significant commodities are:

1997-98 (mt)

Port	Coal/ Coke	POL-Product	Iron Ore/ Pellets	POL-Crude	Cement	Clin-ker	Others	Loaded	Total Loaded	% of Loaded to Total Loaded
Major Ports@										
Haldia	4.1	1.9	-	-	-	-	-	6.1	6.6	92.4
Paradip	6.1	6.4	4.2	-	-	-	-	7.1	8.8	80.7
Cochin	-	1.5	-	-	-	-	-	1.5	2.5	60.0
Mumbai	-	0.9	-	6.7	-	-	-	7.6	12.7	59.8
Visakhapatnam	4.0	0.1	1.9	-	-	-	1.4	7.4	14.2	52.1
New Mangalore	-	2.3	0.4	-	-	-	-	2.7	9.2	29.3
Calcutta	-	0.1	-	-	-	-	0.1	0.2	1.6	12.5
Chennai	-	1.0	-	-	-	-	-	1.0	10.9	9.2
Kandla	-	-	-	-	-	-	0.2	0.2	3.9	5.1
JNPT	-	-	-	-	-	-	0.1	0.1	3.4	2.9
Tuticorin	-	-	-	-	-	-	*	*	1.6	*
Mormugao	*	-	*	-	-	-	*	*	19.2	*
GMB Ports#										
Mul-Dwarka	-	-	-	-	0.8	-	*	0.8	1.4	57.1
Jafrabad	-	-	-	-	-	0.7	-	0.7	1.8	38.9
Others	-	-	0.4	-	0.1	-	0.3	0.8	7.1	11.3
Non-GMB Minor and Intermediate Ports	-	-	0.2	-	-	-	1.7	1.9	4.3	44.2
Total	14.2	14.2	7.1	6.7	0.9	0.7	3.8	38.1	109.2	34.9

* Negligible
@ Basic Port Statistics of India, 1998-99, Ministry of Surface Transport
# Administration Report, 1997-98, Gujarat Maritime Board

2.3 In terms of unloading share, the significant commodities are:

1997-98 (mt)

Port	Coal/ Coke	POL-Crude	POL-Product	Iron Ore/ Pellets	Clinker	Cement	Others	Unloaded	Total Unloaded	% Unloaded to Total Unloaded
Major Ports@										
Tuticorin	5.2	-	0.4	-	-	-	*	5.6	8.4	66.7
Calcutta	-	-	2.0	-	-	-	0.2	2.2	4.2	52.4
Chennai	8.6	2.6	*	-	-	-	*	11.3	24.3	48.3
Mormugao	*	-	0.8	-	-	-	*	0.9	2.0	45.0
Cochin	-	4.1	0.1	-	-	-	*	4.3	9.8	43.9
Visakhapatnam	-	3.3	2.2	0.4	-	-	*	5.9	14.7	40.1
Kandla	-	3.7	1.5	-	-	-	*	5.3	31.5	16.8
Mumbai	-	-	1.7	-	-	-	*	1.7	19.0	8.9
Haldia	-	-	0.8	-	-	-	-	0.8	13.4	6.0
JNPT	-	-	-	0.3	-	-	*	0.3	5.3	5.7
New Mangalore	-	*	0.2	-	-	-	*	0.3	7.0	4.3
Paradip	-	0.1	-	-	-	-	-	0.1	4.5	2.2
GMB Ports#										
Magdalla	-	-	-	2.6	0.4	0.3	0.1	3.4	7.3	46.6
Others	0.2	-	-	-	-	-	0.2	0.4	8.1	4.9
Non-GMB Minor and Intermediate Ports	-	-	-	0.1	-	-	1.3	1.4	8.6	16.3
Total	14.0	13.8	9.7	3.4	0.4	0.3	1.8	43.9	167.2	26.3

* Negligible
@ Basic Port Statistics of India, 1998-99, Ministry of Surface Transport
# Administration Report, 1997-98, Gujarat Maritime Board

2.4 The major coastal cargo flows consist of :

1. Thermal coal (from Haldia, Paradip and Visakhapatnam to Chennai and Tuticorin). This traffic is driven by TNEB.

2. POL products (between major ports, with sources being Mumbai, New Mangalore, Cochin, and Haldia, where the refineries are situated. Jamnagar will also become a key source from this year. The key destinations are Calcutta and Mormugao. Chennai and Visakhapatnam, which also have refineries, seem to be using their capacities for distribution by land).

   POL crude (from Mumbai - Bombay High - to Chennai and Cochin). Imported crude obviously moves directly to the refinery ports.

   This traffic is driven by the petroleum companies, ie, IOC, BPCL, HPCL and Reliance.

3. Iron ore and pellets (Visakhapatnam and New Mangalore to Magdalla) This traffic is driven by ESSAR.

4. From the minor and intermediate ports:

   Cement (Mul-Dwarka to Magdalla and Maharashtra minor ports) This traffic is driven by GACL.

   Clinker (Jafrabad to Magdalla and Maharashtra minor ports) This traffic is driven by GNCL.

2.5 Exhibits 5 and 6 gives the profile of ports where coastal movement (loading and unloading) is significant, for the major ports and the GMB ports. Commodity-wise performance indicators including average turn-round time, pre-berthing time and parcel size are given.

2.6 Much of the traffic is driven by large corporates who view coastal movement as part of their efficient logistics management. They themselves have invested in the necessary multi-modal evacuation of infrastructure and in some places even the port infrastructure (GACL at Mul-Dwarka and ESSAR at Magdalla). Reliance has invested in its own port infrastructure at Jamnagar for receiving POL crude and sending POL products. The shipping capacity is provided as a kind of 'alliance,' with traffic guarantees. Examples are SCI, Great Eastern, etc for the oil companies' POL and Poompuhar Shipping for TNEB thermal coal.

2.7 The future traffic potential for coastal shipping would be large corporates shipping bulk products and general cargo in containerised form. The latter is almost non-existent today.

3 Infrastructure and Economics

3.1 For the thermal coal, the traffic moves from the collieries in Orissa, West Bengal and Bihar by rail to Haldia, Paradip and Visakhapatnam where specific berths and loading facilities are provided for. At Chennai and Tuticorin, similar unloading facilities are provided. At Chennai, the coal moves by rail to two thermal power stations, one located just north of Chennai and the other at Mettur, about 250 kms south-west of Chennai. At Tuticorin, the coal is unloaded and moves directly to the thermal power station by conveyor belt.

Currently, a new port called Ennore port is under the finishing stages of construction, just north of Chennai, both to serve the thermal power station located close by and to remove the congestion and pollution in the city of Chennai due to coal handling. Ennore port will supply coal to the neighbouring thermal power station by conveyor belt and to Mettur by rail. This project is funded by the ADB and takes care of necessary integration with the rail and conveyor belt system for proper evacuation.

3.2 For POL, appropriate investments in railway sidings, tank farms, pump installations, jetties and/or SBMs are in place for integration with the land transport infrastructure. In future, there is a possibility that this traffic might come down due to investments in pipeline, though the main target of this investment is the road and rail movement. Almost all the pipelines including those proposed are hinterland pipelines from the ports, leading away from the sea. The only "coastal" pipeline is the one from Visakhapatnam to Vijayawada, whose lead is small for coastal shipping to be an alternative. If a common carrier pipeline network of reasonable length and density comes into place, then some of the port based refineries may be in a position to service hinterland areas directly by pipeline, rather than coastal shipping and rail/road. Such a network is expected to be in place by 2010 [Hydrocarbon Perspective: 2010, 1995]. (About Rs 4,200 crores is expected to be spend for an additional pipeline network length of 4,100 kms)

3.3 For iron ore, pellets, cement and clinker, dedicated investments in storage and handling equipment, pelletization plants, slurry pipeline (from Kudremukh to New Mangalore), grinding and bagging plants (for clinker) and trucks (for short lead closed system operations eg Kodinar to Mul-Dwarka for cement) are in place.

3.4 For the bulk commodities described above, apart from the transport logistics investments, even the plant location has been strategically determined to take advantage of coastal movement. This applies to the thermal power stations at Chennai and Tuticorin, port based refineries, pelletization plant at Visakhapatnam, sponge iron manufacturing plant at Hazira near Magdalla, and the cement plants near Mul-Dwarka and Jafrabad.

3.5 Based on studies of iron ore, sponge iron [Raghuram and Mathew, 2000] and cement movement [Banerjee, Raghuram and Rangaraj, 2000], we conclude that, given the infrastructure, the operating economics are in favour of coastal movement, whose transport cost per tonne km would be Rs 0.25 or less (even for vessels of 3,000

tonnes capacity), while corresponding costs would be Rs 0.60 to Rs 1.20 by rail or road, depending on the distance.

As a proportion of total logistics cost (including transportation, related inventory, handling and related losses), the transportation cost ranged from 90% to 40% from low value bulk commodities to high value consumer goods for road, 85% to 30% for rail and 80% to 20% for shipping, for a 1,000 kms lead.

Despite the fact that coastal shipping would in general require additional land leads, the cost differentials favour coastal shipping even for an east-west movement. In such cases, the sea distances would be 2,500 to 4,000 kms and about twice the port to port direct land lead. More interior the origin/destination, the advantage of coastal shipping would reduce.

3.6 To emphasize the cost advantage of coastal shipping, we present a mode choice analysis below.

Appendix 1 gives the analysis for an east to west coastal movement of lump iron ore from Daitari via Paradip to a sponge iron plant on the west coast, as part of a mode choice analysis. (The actual location and name have been changed for sensitivity purposes. The analysis was done for the mid nineties. However, the relative costs would still be valid.) While the analysis shows the detail for this movement, coastal shipping emerged as the best alternative for all the inbound movements (slide 11).

The total logistics cost advantage for coastal shipping was over Rs 1 crore for the raw material from Daitari, as compared to rail whose total cost was Rs 3.25 crores (slide 10). Similar advantages would accrue for the other raw material sources. This analysis does not take into consideration the investment cost at the plant end for dealing with the sea cargo. This was partly due to the fact that some investments in a jetty had already been made for importing the plant machinery during the project stage. The additional investments in the jetty were less than the investments required for constructing a railway siding from the nearest rail access point.

Another interesting dimension for this company was the choice of market based on logistical competitive advantage. The finished product (sponge iron) could use the returning empty vessels to the east coast at an additional transportation cost of Rs 140/tonne (the inbound full cost of transportation including the empty return of the vessel was Rs 260/tonne), while rail would have costed anywhere between Rs 382 to Rs 544/tonnes (slide 12). In this instance, for coastal shipping, the costs due to inventory, handling and losses would be significant since the inherent value of sponge iron was Rs 4,000/tonne (as opposed to Rs 250/tonne for iron ore). However, the total costs were still in favour of using the coastal route and servicing a market with competitive advantage over other suppliers who were located closer to the eastern markets. The same was true for markets near Mangalore.

Appropriate infrastructure to integrate with the land movement were key elements, both for raw material and finished goods, at the ports which were at the non-plant end. These being major ports, such infrastructure was readily available, including appropriate dumping space. Rail/road connectivity were in place. At the plant end, the key infrastructure was floating cranes to augment the unloading/loading rates of the mother vessel at anchorage and barges to shuttle between anchorage and jetty. Handling and conveyor based evacuation was required between the jetty and the port based plant.

3.7 The significance of the total logistics cost for the sponge iron manufacturer [Raghuram and Mathew, 2000] can be viewed as below. These figures are at mid-nineties prices.

Inbound Logistics

(All figures per mt of sponge iron)

Sr No	Raw Material	Quantity	Procure-ment Cost (Rs)	Transportation, Handling and Related Inventory Cost (Rs)	Buffer Stock (Rs)	Storage and Handling Losses (Rs)
1	Natural Gas at Plant	300 cu m	750	-	-	-
2	Pellets at Mangalore	1.24 mt	744	300	12	13
3	Lump Ore at Daitari	0.124 mt	31	44	1	3
4	Lump Ore at Banspani	0.124 mt	31	44	1	3
5	Lump Ore at Goa	0.061 mt	19	12	1	1
	Total		1575	400	15	20

Sponge Iron Value Chain

(Rs per mt of sponge iron)

1	Selling Price	4275	
2	Profits and Taxes	750	
3	Cost of Delivered Product (1-2)	3525	
4	Raw Materials Procurement Cost	1575	
5	Value Added (1-4)	2700	
6	Controllable Portion of Value Added (3-4)	1950	
7	Logistics Cost	Inbound	Outbound
7.1	Transportation, Handling and Related Inventory Cost	400	700
7.2	Buffer Stock	15	75
7.3	Storage and Handling Losses	20	160
7.4	Total	435	935
7.5	Total Logistics Cost	1370	
8	Conversion Cost	580	
9	Total Logistics Cost/Value Added	51%	
10	Total Logistics Cost/Controllable Portion of Value Added	70%	
11	Total Logistics Cost/Selling Price	32%	

Raw Material Cost at Source	Inbound Logistics Cost	Raw Material Cost at Plant	Cost of Conver-sion	Finished Goods Cost at Plant	Outbound Logistics Cost	Cost of Delivered Product	Profits and Taxes	Selling Price
1575	435	2010	580	2590	935	3525	750	4275

3.8 A professionally run company like Gujarat Ambuja Cements Ltd (GACL) prefers to use coastal wherever possible, over land transportation. They have invested towards this end in terms of integrating coastal movement with the land leads. While data on their costs for coastal movement are not available, their rail and road freight costs (not total logistics cost) from their plant at Kodinar (served by the port of Mul-Dwarka) to Surat are Rs 600 and Rs 558 per tonne respectively [GACL, 1999]. The rail cost by the shortest route would be Rs 545, but then this route has restrictions due to the Gir sanctuary, due to which the actual cost works out to be Rs 600.

It is our assessment that the transportation cost from Kodinar to Surat using coastal movement would be no more than Rs 150/tonne including the land leads. Part of the saving is also due to the shorter coastal lead across the Gulf of Khambat.

4 Traffic Potential

4.1 Based on the above economics, there would be scope for increased use of coastal shipping, with appropriate infrastructure to integrate with the rest of the transport network.

4.2 It would be difficult to quantify the traffic potential for coastal movement, since much of it would depend on the port and multimodal infrastructure, and industrial and distribution centre location strategies. In terms of domestic originating tonnes, the railways handled about 420 mt in 1998-99. Assuming that traffic using road as the primary movement had similar leads as rail, and given that road share in tkms is one and a half times the rail share, the originating traffic for primary road movement would be about 630 mt. (We emphasize 'primary,' since almost every unit of traffic starts its journey by road, but then could be servicing rail or sea - both coastal and overseas – with very short leads. A primary movement would not include such movements).

Out of the resultant total of over 1 billion tonnes of domestic originating traffic, if a 5% share can be captured by coastal shipping, that would amount to 50 mt. This would be in addition to the 41 mt of originating coastal traffic for 1998-99. *It ought to be possible for coastal shipping to capture 50 mt of traffic in a five year horizon.* (In fact, this figure would be less than the annual growth in originating tonnes in India). This would amount to a 14% annual growth rate from the figure of 41 mt in 1998-99 to reach about 90 mt in 2004-05. At a macro level, the transport demand effort multiplier for India has been estimated at 1.5, ie the total tkms of traffic would grow at 1.5 times the GDP growth rate. With an estimated 6-7% GDP growth rate over the next few years, the transportation demand would grow at 10% per year. The expectation for coastal movement growth is thus higher.

4.3 The scope for increasing coastal traffic would be the movement of coal (along the east coast and from east to west, with port based distribution centers), iron ore (east to west and along the west coast), fertilizers and cement (port based plant to port based distribution centers), salt (along the west coast and west to east), foodgrains (north to south, partly by land and partly by coast) and plantation produce (south to north, partly by coast and partly by land).

(Projections on additional coal movement from Paradip for power plants in Tamil Nadu by 2004-05 are 13 mt, of which 8 mt would be to the new port at Ennore, 3.5 mt to Cuddalore and 1.5 mt to Tuticorin. Another forecast for 2006-07 suggests a total of 16/20/30 mt as the thermal coal requirements through Chennai and Ennore ports, depending on a low/medium/high scenario [Ennore Port, 1999]. This compares with the current (1998-99) thermal coal unloading of about 10 mt at Chennai.)

Much of this cargo would be driven by corporates and investments specific to the nature of the cargo would be necessary.

4.4 There is also scope of moving higher value manufactured goods in a containerized manner from industrial concentrations to redistribution centers. The Mumbai area is

one possible source, as also other industrial zones, which could be developed near port locations. There is also the possibility of moving tea from Assam to the west coast consumption points of Gujarat and Maharashtra.

The government of Gujarat has done some work on this issue of joint development of industry and ports (Dahej is an example) and has come out with a vision document [Vision-2010, 1999]. However, an interesting counter point is offered in appendix 2, essentially making a case for investments in research and development, and education for human resources development, without which the vision would just remain a vision.

4.5 A study [Banerjee, Raghuram and Rangaraj, 2000] was done for Konkan Railway Corporation (KRC) to assess the traffic potential along the west coast, which could use KRC. Thirteen companies were studied and their inputs are summarized in appendix 3. The study did not quantify the likely market realization, but concluded that KRC should focus on marketing service concepts since the customers' willingness to shift modes was a function of the desired services being offered. This study also examined inputs from a study by RITES [RITES, May 1996] which provided a list of commodities and the quantity estimates moving to and from Kerala on the western north – south axis. The south to north and north to south traffic for Kerala were estimated as 67,000 and 131,000 tonnes/day respectively, for the year 2005-06. This amounts to about 25 mt (south to north) and 50 mt (north to south) per year. Thus, a similar market exists for coastal shipping movement along the Gujarat – Maharashtra – Karnataka – Kerala coast.

However, rigorously estimated commodity-wise origin destination flows at least between the coastal states and part of the northern hinterland, which are candidates for coastal movement, are not available [*data limitation 3*]. While cost would be an advantage for coastal shipping, service concepts such as door to door delivery, quick and loss free transit, tracking and insurance would also be essential.

5. Utilization of Ships

5.1 The growth of Indian shipping capacity, both in coastal and overseas is given in exhibit 7. In terms of number of vessels, there has been a gradual increase in the coastal share, while in terms of GRT, the share has remained steady. The average GRT of a coastal vessel is 2,500 while that for an overseas vessel is 26,400. The coastal vessels also include non-cargo carrying vessels like tugs, dredgers and offshore supply and service vessels. Exhibit 8 gives the growth profile of the coastal fleet by type of vessel. To a greater detail, exhibit 9 gives the profile of coastal vessels as of September 1999. The age profile of the Indian tonnage is given in exhibit 10, which indicates that the coastal tonnage is older than the overseas tonnage. The companywise ownership of the coastal fleet is given in exhibit 11, both vessel-wise and tonnage-wise. ONGC, which has the highest number of vessels, owns the offshore supply and service vessels. On the other hand, SCI, which has the highest tonnage, owns dry bulkers and tankers servicing the coastal market.

While exhibits 7 to 11 give data related to Indian flag vessels, it should be noted that non-Indian flag vessels are also pressed into service for meeting coastal traffic requirements. This is obvious from the following analysis:

Commodity	dwt	Loaded mt/year	Average tonnes/ dwt/ year	Remarks on average tonnes/ dwt/year
Dry Bulk (Thermal Coal, Iron Ore and Pellets)	305,827	19.0	62.12	Very high
POL Product	132,042	8.0	60.58	Very high
POL Crude	82,249	6.0	72.95	Very high
Cement and Clinker	83,900	1.7	20.26	Ok

While the capacity utilization for cement and clinker is in reasonable range, the same is not the case for dry bulk and POL. An average tonnes/dwt/year of 20 (for cement and clinker) implies 18 (365/20) days between two successive loadings. An average of 60 (for the other cargo) implies just 6 (365/60) days between two successive loadings. The latter is questionable and hence the implication of the significant use of non-Indian flag vessels. However, appropriate data on this is not available [*data limitation 4*]

We conclude that the availability of appropriate shipping capacity is not an issue for the growth of coastal shipping. An important reason for this is that private initiative drives this to a large extent.

6 Regulatory Issues

6.1 Customs: This is viewed as a significant bottleneck, leading to extra paperwork, consequential delays and corruption. The government constituted Working Group on Coastal Shipping (1993) recommended that coastal traffic should be removed from the purview of strict day to day control of the Customs Act (Appendix 4). However, to the question as to whether customs must be completely off the coastal traffic, some of the ship owners said that this would not be appropriate and customs must have the right to inspect any vessel/cargo. However, *regarding customs control, the paradigm needs to change from "prove that you are not at fault" to "beware of consequences of illegal doings". To ease customs inspections and streamline the coastal cargo flow, and reduce the possibilities of illegal doings, it is suggested that (i) there be specific ports or jetties earmarked for coastal traffic and (ii) coast guard monitoring be improved.* Indonesia is an example of a country with significant coastal shipping where separate ports/jetties are earmarked for coastal movement.

6.2 Ports with bureaucratic orientation: This is a major bottleneck, especially the turn round times. Ports often do not do their best in terms of servicing ships and reducing turn round times. They are not stakeholders in this process, even if the share of coastal business (section 2.2 and 2.3) is significant. Corporatization and increased autonomy for ports would be steps in the right direction. *Ship owners have also pointed out that definitions of "overseas" and "coastal" vary between customs and ports, causing extra documentation and complexity. This needs to be standardized.*

In the recent past, GMB (Appendix 5) can be viewed as a success story in facilitating coastal traffic, through faster responses to customer requirements and proactive marketing to traffic. For example, between 1990-91 and 1998-99, the coastal traffic in GMB grew from 2.3 mt to 6.4 mt at a compounded annual growth rate of 13%. During the same period, the major port coastal traffic grew from 49.0 mt to 75.8 mt at a rate of 5.6%.

While GMB has 40 registered minor and intermediate ports, the top six ports account for nearly 72% of the GMB traffic. Of these six ports, five are direct berthing. Two do not have rail connection, but are really ports serving cement plants located close to port. Among the remaining four having rail connection, Magdalla (the port with the highest traffic) is least dependent on rail, since most of its traffic either terminates or originates at plants near the port. While traffic in and out of Bedi, Okha and Sikka use railways, the rail access is not right up to the jetty, thereby requiring an extra handling by road.

The relative success of GMB is attributable both to a strategic vision driven by political will and operational autonomy. GMB has been successful in facilitating captive jetties and ports, and more recently joint venture ports (GPPL at Pipavav and GAPL at Mundra) which are at a take-off stage.

The lesson from GMB is that *port development could be more effective if it is market driven, and it leverages initiatives by major users (captive jetties and ports) and through private participation.* Even in the GMB context, one does get the feeling that a lot more can be achieved if the role of GMB became more and more that of a facilitator.

6.3 Cabotage: This is an international issue, supposedly driven by security, protectionist and "others are doing it, why not me" concerns. The cabotage rules in India are relatively liberal compared to many other countries like the US and EC. All that is required is 75% Indian ownership in a company providing coastal shipping services. Appendix 6 gives an overview of the application of cabotage law in India with an international comparison.

It is important for coastal shipping that the cabotage regulations stay at the current liberal level. This helps bring in the most appropriate shipping capacity and commercial management for coastal shipping. *An important step, however, would be to change the Indian ownership requirement to 74%, which would permit a foreign partner to seek a board position with 26% equity.*

6.4 A draft Coastal Shipping Act is under consideration, to bring coastal shipping outside the purview of the existing Merchant Shipping Act, 1958 [Gill J S, 1990], with a view to provide less stringent mandatory requirements in respect of design, construction, equipment, manning, liability etc without, however, compromising on safety [Draft Coastal Shipping Act, 1999]. The expert committee which drafted this felt that this would facilitate the development of coastal shipping.

In our view, however, lack of such an Act has not been a deterrent for the development of coastal shipping. *While the proposed Coastal Shipping Act could lend focus to this transport mode, it should in no way bring in greater controls or bureaucracy in decision making.*

7 Infrastructure Focus Areas

7.1 Turn round times: One of the key, if not the most important concern of coastal movement is turn round times at ports. Given that coastal movements would by definition be of short duration (in Europe, similar services are called "short sea shipping"), the port turn round times should also be small. With a speed of 10 knots/hour (25 kms/hour), distances of 1,000, 2,000 and 3,000 kms would be completed in 40 (1.66), 80 (2.33) and 120 (5) hours (days) respectively. However, as per exhibit 4, the average turn round times range from 3 to 5 days in most ports and up to 8 days in Chennai and Visakhapatnam for the coastal cargo. At Magdalla, due to lighterage operations, the turn round time for iron ore and pellets could be as high as 15 days. The pre-berthing detentions range from 0.5 to 2 days in most ports and up to 6 days in Chennai. *Greater attention is called for in reducing the pre-berthing detention and the turn round time. Priority for coastal vessels including dedicated jetties, direct berthing and better loading, unloading and evacuation systems would be essential.*

7.2 Parcel sizes: As was in exhibits 4 and 5, the average parcel size for thermal coal is about 30,000 tonnes, for POL product between 8,000 to 30,000 tonnes, POL crude about 29,000 tonnes, iron ore and pellets between 47,000 to 67,000 tonnes. All this cargo is handled at the major ports both for loading and unloading, except iron ore and pellets which are unloaded at Magdalla with a floating crane for lighterage. Cement and clinker movement takes place in vessels and barges with parcel sizes between 3,000 to 5,000 tonnes.

Other commodities which could potentially use coastal shipping would move in parcel sizes at the smaller end of the range, ie 3,000 to 5,000 tonnes. This would also be applicable for containerized general cargo, to that extent requiring lesser consolidation efforts. Such vessels would typically run with 150 to 250 TEUs.

The smaller parcel sizes are in line with the just-in-time concept of supply chain management. Even though the economies of scale for ship movement would not be fully exploited, the cost advantage over land transport is still significant. Another major advantage is that draft requirements (about 4 m) for such vessels would be low, thereby offering flexibility in locating new ports for coastal traffic.

It is important to think 'small' (3,000 to 5,000 tonnes parcel size), while considering infrastructure for coastal movement, especially in terms of handling equipment, jetties and shipping capacity. The draft requirement for jetties/ports handling such parcel sizes would be about 4 m. This is especially for the non-captive coastal shipping. Coastal shipping by captive users could think of parcel sizes most economical to their operations (eg TNEB coal, oil companies' POL, Essar iron ore, etc).

7.3 Evacuation infrastructure: In each of the port sites, both the road and rail access needs to be provided for. While thinking of rail and coastal shipping integration, the parcel sizes should be multiples of rake sizes. This will enable quick evacuation, without having to consolidate cargo across vessels.

Even though we are proposing ports with low draft in view of the small parcel size approach, the ports need to be geared well to permit quick loading and unloading. The emphasis on gearing is all the more critical since (i) small ports are usually not well equipped and (ii) the small parcel size low draft vessels would be more economical with no gear. The ports also need to permit round the clock and round the year operations. Only then the desired flexibility and service level would be offered for the market to accept the port and ensure viability.

To establish the economies of gearing at ports rather than ships, we show a calculation in exhibit 13. This yields that for a given level of non-bulk originating coastal traffic (say 50 mt), we need 667 ships of 3,000 dwt and 140 jetties. For the same loading/unloading effectiveness, a crane on a ship is more expensive not only for investment, but also for operating costs. On top of this, shipboard gearing requirement in numbers alone would be more than four times. Thus *port based gearing would be more economical than ship based gearing, and also easier to implement since the private sector ship owners would want to keep their investment costs low.*

In Europe and US, the coastal shipping is also integrated well with the inland water transportation for through movement and evacuation. Unfortunately, our potential inland waterways have not been properly maintained and thus cannot really be integrated with the coastal system. If at all, the options are the three national waterways, namely Hooghly-Ganga, Brahmaputra and Kerala coastal waterway, and the Godavari. Currently, it would be difficult to even consider parcel sizes of 300 tonnes to move in a reliable manner.

7.4 Port locations: *To facilitate coastal movement and reduce land leads, ports would need to be spaced all along the coastline, with a gap of no more than say 300 kms. This would require about 20 port locations along India's 6400 km coastline, of which 10 could be at or adjacent to the existing major ports. Locations should be easily accessible from the sea and have good land evacuation facilities.* Some locations may be captive to industries. Others would serve the purpose of decongesting existing major ports, both in terms of berthing capacity and evacuation access. Chennai and Calcutta need to be bypassed for both the criteria, Visakhapatnam for the former and Mumbai for the latter. Haldia could be an alternate for Calcutta and Ennore for Chennai. Alternate sites near Visakhapatnam and say both north and south of Mumbai need to be considered.

Exhibit 12 shows a map with possible port sites along with the major ports for coastal movement. Many of these sites have been proposed in various reports concerning coastal shipping and/or port development (Appendix 4).

7.5 Port economics: *For an additional 50 mt of originating coastal traffic, we would need 140 jetties spread over 20 locations, ie seven jetties/port. The typical cost of a 4 m draft, seven geared jetty port would be in the range of Rs 50 to 100 crores, depending on the hydrographics* (based on interviews with port executives and shipowners). According to sources from GMB, a berth for upto seven 5,000 dwt ships would need to be 350 m long (50 m/ship). With a 30 m backup area, the total berth area would be 10,500 sq m. The cost per sq m for a 4 m draft jetty would be Rs

40,000, thus amounting to a total of Rs 42 crores. Seven cranes with a 60 tonne capacity would be required to ensure unloading/loading within 24 hours at a 100% peak berth occupancy. Each such crane would cost Rs 2 crores. Thus the total crane cost would be Rs 14 crores. Warehousing and rail/road access would cost an additional Rs 4 crores. The total cost of the port, excluding any navigation dredging would be Rs 60 crores.

The annual operating and maintenance costs of such a port would be around 30% of the investment cost, ie about Rs 20 crores/annum. Since each additional port is expected to handle about 5 mt/annum, even at the low end revenue/tonne of Rs 100, the total revenue would be Rs 50 crores/annum. The surplus would be more than sufficient for financing costs, thus making the ports for coastal operations a viable business. (A port business is in general a very viable one, as reflected by the fact that all our ports are financially healthy).

7.6 Private investment: *All this additional investment should take place with private investment of appropriate stakeholders (high intensity users, shipping companies and other organizations with significant multimodal/maritime experience). Tying up investments for industry and/or distribution centres near ports, along with easy integration with land transport would be key factors of success. What would be really important is coordinated development.*

7.7 Shipping capacity and manning: *Shipping capacity as such is not a problem, since the vessels required for coastal operations can either be manufactured in India or sourced in through a bare boat charter or even, as per latest relaxations, chartering in of a foreign flag vessel.*

Further, depending on the economics of the market, Indian owners can easily change the registration of vessels between coastal to overseas and vice-versa.

The manning requirements of coastal vessels are lesser than overseas vessels, thereby offering scope for economy. Some of the ship owners state that there is further room in reducing manning requirements. However, *the crucial issue in manning is the quality of manpower*, since better take home salaries are available in overseas shipping. In the words of one of the coastal ship owners, coastal vessels are manned by "grandfathers". *There does not seem to be any solution to this other than being able to pay higher salaries, which would automatically happen with better market conditions and utilization of vessels.*

8 Conclusions

8.1 At the 1998-99 level of total port traffic of 288 mt, the coastal traffic was about 87.4 mt. The total originating traffic during 1998-99 was 37.3 mt. Assuming a lead of 1,600 kms for all the coastal traffic, the total tkms (tonne kms) would be 65.6 billion. The total land movement was 710 btkms and the total domestic movement (including coastal) about 775.6 btkms. Thus coastal movement has a market share of 8.5% of the domestic movement.

8.2 Coastal shipping is more environment friendly (we do not even seek to justify it), less expensive and with the potential of relieving congestion on land transport.

8.3 It ought to be possible for coastal shipping to capture 50 mt of traffic in a five year horizon.

8.4 Regarding customs control, the paradigm needs to change from "prove that you are not at fault" to "beware of consequences of illegal doings". To ease customs inspections and streamline the coastal cargo flow, and reduce the possibilities of illegal doings, it is suggested that (i) there be specific ports or jetties earmarked for coastal traffic and (ii) coast guard monitoring be improved.

8.5 Ship owners have also pointed out that definitions of "overseas" and "coastal" vary between customs and ports, causing extra documentation and complexity. This needs to be standardized.

8.6 Port development could be more effective if it is market driven, and it leverages initiatives by major users (captive jetties and ports) and through private participation.

8.7 It is important for coastal shipping that the cabotage regulations stay at the current liberal level. An important step, however, would be to change the Indian ownership requirement to 74%, which would permit a foreign partner to seek a board position with 26% equity.

8.8 While the proposed Coastal Shipping Act could lend focus to this transport mode, it should in no way bring in greater controls or bureaucracy in decision making.

8.9 Greater attention is called for in reducing the pre-berthing detention and the turn round time. Priority for coastal vessels including dedicated jetties, direct berthing and better loading, unloading and evacuation systems would be essential.

8.10 It is important to think 'small' (3,000 to 5,000 tonnes parcel size), while considering infrastructure for coastal movement, especially in terms of handling equipment, jetties and shipping capacity. The draft requirement for jetties/ports handling such parcel sizes would be about 4 m. This is especially for the non-captive coastal shipping. Coastal shipping by captive users could think of parcel sizes most economical to their operations.

8.11 Port based gearing would be more economical than ship based gearing, and also easier to implement since the private sector ship owners would want to keep their investment costs low.

8.12 To facilitate coastal movement and reduce land leads, ports would need to be spaced all along the coastline, with a gap of no more than say 300 kms. This would require about 20 port locations along India's 6400 km coastline, of which 10 could be at or adjacent to the existing major ports. Locations should be easily accessible from the sea and have good land evacuation facilities.

8.13 For an additional 50 mt of originating coastal traffic, we would need 140 jetties spread over 20 locations, ie seven jetties/port. The typical cost of a 4 m draft, seven geared jetty port would be in the range of Rs 50 to 100 crores, depending on the hydrographics.

8.14 All this additional investment should take place with private investment of appropriate stakeholders (high intensity users, shipping companies and other organizations with significant multimodal/maritime experience). Tying up investments for industry and/or distribution centres near ports, along with easy integration with land transport would be key factors of success. What would be really important is coordinated development.

8.15 Shipping capacity as such is not a problem, since the vessels required for coastal operations can either be manufactured in India or sourced in through a bare boat charter or even, as per latest relaxations, chartering in of a foreign flag vessel.

8.16 The crucial issue in manning is the quality of manpower. There does not seem to be any solution to this other than being able to pay higher salaries, which would automatically happen with better market conditions and utilization of vessels.

Data Limitations

1. Explanation for the difference between aggregate loaded and unloaded coastal cargo.

2. Nature of coastal transhipment.

3. Understanding of domestic OD flows, especially of non-bulk cargo.

4. Usage of foreign flag vessels for coastal movement.

References Used in the Paper

- Banerjee Bibek, Raghuram G and Rangaraj N, 'Konkan Railway Corporation Limited,' *Vikalpa: The Journal for Decision Makers,* Volume 25/Number 1, January-March 2000
- Ennore Port, Feasibility Study Documents for Ennore Port, 1999
- Gill J S, 'Control of Indian Ships And Ships Engaged in Coasting Trade,' *Manual of Merchant Shipping Act, 1958,* Bhandarkar Publications, Bombay, October 1990
- Gujarat Ambuja Cements Limited, Private correspondence, 1999
- Gujarat Infrastructure Development Board, 'Gujarat Infrastructure Agenda: Vision 2010,' 1999
- Gujarat Maritime Board, 'Administration Report,' 1998-99
- Indian Ports Association, 'Major Port Statistics of India: A Profile,' 1998-99
- Maritime Monitor, Editorial, 'Cabotage Law in India – An International Comparison, April 2000
- Ministry of State for Petroleum and Natural Gas, 'Hydrocarbon Perspective: 2010,' *Report of the Study Group,* 1995
- Ministry of Surface Transport, 'Annual Report,' 1999-2000
- Ministry of Surface Transport, 'Basic Port Statistics of India,' 1998-99
- Ministry of Surface Transport, 'Indian Shipping Statistics,' 1998 & 1999
- Ministry of Surface Transport, 'Pocket Book on Transport Statistics of India,' 1997
- Ministry of Surface Transport, *Report of the Expert Committee on Draft Coastal Shipping Act,* March 1999
- Ministry of Surface Transport, *Report of the Working Group on Development of Coastal Shipping,* 1993
- Raghuram G and Chaudhary Anirban, 'A Note on Coastal Shipping,' Indian Institute of Management, 1994.
- Raghuram G and Mathew Dilip, 'Laxmi Transformers: A Case Study,' *Logistics and Supply Chain Management: Cases and Concepts,* Macmillan India Limited, New Delhi, 2000

References Studied

- Asian Development Bank, Ministry of Surface Transport, 'Policy Reforms in the Indian Ports and Shipping Sector,' *Inception Report,* August 1993
- Current Publications, 'Provisions Relating to Coastal Goods and Vessels Carrying Coastal Goods,' *The Customs Act, 1962,* Mumbai, 2000
- Devli Anil, 'Shipping as Infrastructure – The Coastal Alternative,' *Indian Shipping,* Volume 52, Nos 3-4 March/April 2000
- Indian National Shipowner's Association, 'Annual Review,' 1998-99
- Maritime Monitor, 'A Survey on Coastal Shipping in India,' April 2000
- Ministry of Surface Transport, *Report of the National Shipping Policy Committee,* July 1997
- Raghuram G, 'Towards a National Shipping Policy,' *A Study of the Indian Shipping Industry,* PSG Monograph, Indian Institute of Management, Ahmedabad, October 1996
- Shipping Corporation of India Ltd, 'Annual Report,' 1997-98
- World Bank, South Asia Regional Office, 'India Port Sector,' *Strategy Report,* March 1995

Exhibit 1

Cargo Traffic

('000 tonnes)

Major Ports

Year		Overseas				Coastal				Total				% of Coastal to Total			
		Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total
1997-98	@	106881	61430	10675	178986	35287	33334	4052	72673	142168	94764	14727	251659	24.8	35.2	27.5	28.9
1998-99	@	110853	54205	10820	175878	39927	32024	3891	75842	150780	86229	14711	251720	26.5	37.1	26.4	30.1

GMB Ports

1997-98	#	11588	7931	0	19519	3821	2284	0	6105	15409	10215	0	25624	24.8	22.4	0.0	23.8
1998-99	#	13429	5219	0	18648	3498	2863	0	6361	16927	8082	0	25009	20.7	35.4	0.0	25.4

Non-GMB Minor and Intermediate Ports

1997-98	*	7156	2488	0	9644	1400	1939	0	3339	8556	4427	0	12983	16.4	43.8	0.0	25.7
1998-99	*	2360	3113	0	5473	2716	2452	0	5168	5076	5565	0	10641	53.5	44.1	0.0	48.6

All India Traffic

1997-98		125625	71849	10675	208149	40508	37557	4052	82117	166133	109406	14727	290266	24.4	34.3	27.5	28.3
1998-99		126642	62537	10820	199999	46141	37339	3891	87371	172783	99876	14711	287370	26.7	37.4	26.4	30.4

@ Major Ports of India: A Statistical Profile, 1992-93 to 1998-99, Indian Ports Association

Administration Report, 1997-98 & 1998-99, Gujarat Maritime Board

* Basic Port Statistics of India, 1998-99, Ministry of Surface Transport

Cargo Traffic (Time Series)

Major Ports ('000 tonnes)

Year	Overseas				Coastal				Total				% of Coastal to Total			
	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total	Unloaded	Loaded	Transhipment	Total
1960-61 #	17711	6350	NA	24061	4870	4192	NA	9062	22581	10542	NA	33123	21.6	39.8	NA	27.4
1970-71 #	21495	26582	NA	48077	4062	3440	NA	7502	25557	30022	NA	55579	15.9	11.5	NA	13.5
1980-81 #	39090	28503	NA	67593	7726	4951	NA	12677	46816	33454	NA	80270	16.5	14.8	NA	15.8
1990-91 #	59023	43629	NA	102652	26065	22948	NA	49013	85088	66577	NA	151665	30.6	34.5	NA	32.3
1991-92 @	58564	44239	NA	102803	26280	25065	NA	51345	84844	69304	NA	154148	31.0	36.2	NA	33.3
1992-93 @	71427	43102	2469	116998	23924	24424	904	49252	95351	67526	3373	166250	25.1	36.2	26.8	29.6
1993-94 @	75002	53220	3988	132210	21669	23414	1937	47020	96671	76634	5925	179230	22.4	30.6	32.7	26.2
1994-95 @	80390	51995	4150	136535	29327	29424	1976	60727	109717	81419	6126	197262	26.7	36.1	32.3	30.8
1995-96 @	92257	56833	5988	155078	28377	28842	3029	60248	120634	85675	9017	215326	23.5	33.7	33.6	28.0
1996-97 @	98577	57822	8108	164507	30512	29589	2649	62750	129089	87411	10757	227257	23.6	33.9	24.6	27.6
1997-98 @	106881	61430	10675	178986	35287	33334	4052	72673	142168	94764	14727	251659	24.8	35.2	27.5	28.9
1998-99 @	110853	54205	10820	175878	39927	32024	3891	75842	150780	86229	14711	251720	26.5	37.1	26.4	30.1

Minor and Intermediate Ports

Year	Overseas			Coastal			Total			%of Coastal to Total		
	Unloaded	Loaded	Total	Jnloadec	Loaded	Total	Unloaded	Loaded	Total	Unloadec	Loaded	Total
1960-61 #	305	1621	1926	1027	1454	2481	1332	3075	4407	77.1	47.3	56.3
1970-71 #	869	3391	4260	871	1557	2428	1740	4948	6688	50.1	31.5	36.3
1980-81 #	1921	3385	5306	577	849	1426	2498	4234	6732	23.1	20.1	21.2
1990-91 #	5713	3854	9567	1964	1251	3215	7677	5105	12782	25.6	24.5	25.2
1991-92 #	4765	4104	8869	3016	1373	4389	7781	5477	13258	38.8	25.1	33.1
1992-93 #	6233	4737	10970	3094	1339	4433	9327	6076	15403	33.2	22.0	28.8
1993-94 #	7585	6625	14210	3839	1421	5260	11424	8046	19470	33.6	17.7	27.0
1994-95 *	8606	6424	15030	6367	1885	8252	14973	8309	23282	42.5	22.7	35.4
1995-96 *	9951	8172	18123	5116	2471	7587	15067	10643	25710	34.0	23.2	29.5
1996-97 *	10769	7671	18440	6115	3277	9392	16884	10948	27832	36.2	29.9	33.7
1997-98 *	18744	10419	29163	5221	4223	9444	23965	14642	38607	21.8	28.8	24.5
1998-99 *	15789	8332	24121	6214	5273	11487	22003	13605	35608	28.2	38.8	32.3

Basic Port Statistics of India, 1994-95, Ministry of Surface Transport

@ Major Ports of India: A Statistical Profile, 1992-93 to 1998-99, Indian Ports Association

* Basic Port Statistics of India, 1998-99, Ministry of Surface Transport

Exhibit 3

Passenger Traffic (Time Series)

Major Ports ('000s)

Year	Overseas			Coastal			Total		
	Embarked	Disembarked	Total	Embarked	Disembarked	Total	Embarked	Disembarked	Total
1960-61 *	116.2	125.3	241.5	487.0	465.6	952.6	603.2	590.9	1194.1
1970-71 *	76.0	90.3	166.3	299.1	280.0	579.1	375.1	370.3	745.4
1980-81 *	34.1	36.1	70.2	163.1	154.9	318.0	197.2	191.0	388.2
1990-91 *	7.1	10.6	17.7	72.3	66.4	138.7	79.4	77.0	156.4
1991-92 *	15.6	10.4	26.0	70.6	65.8	136.4	86.2	76.2	162.4
1992-93 *	21.1	14.2	35.3	86.5	81.6	168.1	107.6	95.8	203.4
1993-94 *	15.4	9.8	25.2	102.9	87.5	190.4	118.3	97.3	215.6
1994-95 *	18.9	14.6	33.5	120.1	112.6	232.7	139.0	127.2	266.2
1995-96 *	20.9	21.5	42.4	124.3	129.2	253.5	145.2	150.7	295.9
1996-97 @	11.7	13.1	24.8	118.8	133.6	252.4	130.5	146.7	277.2
1997-98 @	12.6	20.2	32.8	114.5	118.7	233.2	127.1	138.9	266.0

Minor and Intermediate Ports

Year	Overseas			Coastal			Total		
	Embarked	Disembarked	Total	Embarked	Disembarked	Total	Embarked	Disembarked	Total
1990-91 @	0.0	0.0	0.0	7205.0	6956.1	14161.1	7205.0	6956.1	14161.1
1991-92 @	0.0	0.0	0.0	7803.3	7782.6	15585.9	7803.3	7782.6	15585.9
1992-93 @	4.1	0.0	4.1	7595.8	7347.3	14943.1	7599.9	7347.3	14947.2
1993-94 @	0.0	0.0	0.0	7748.9	7663.9	15412.8	7748.9	7663.9	15412.8
1994-95 @	0.0	0.0	0.0	7975.2	7659.0	15634.2	7975.2	7659.0	15634.2
1995-96 @	0.0	0.0	0.0	9148.7	8634.3	17783.0	9148.7	8634.3	17783.0
1996-97 @	1.5	0.1	1.6	7756.8	7393.7	15150.5	7758.3	7393.8	15152.1
1997-98 @	2.4	2.5	4.9	8609.8	8428.0	17037.8	8612.2	8430.5	17042.7

* Pocket Book on transport Statistics in India, 1997, Ministry of Surface Transport
@ Basic Port Statistics of India, 1998-99, Ministry of Surface Transport

Exhibit 4

Portwise Cargo Traffic, 1998-99

('000 tonnes)

Port	Overseas				Coastal				Total				% of Coastal to Total			
	Un-loaded	Loaded	Tran-shipment	Total	Un-loaded	Loaded	Tran-shipment	Total	Un-loaded	Loaded	Tran-shipment	Total	Un-Loaded	Loaded	Tranship-ment	Total
Major Ports @																
Calcutta	2377	920	3508	6805	2120	221	17	2358	4497	1141	3525	9163	47.1	19.4	0.5	25.7
Haldia	13161	728	0	13889	439	5896	0	6335	13600	6624	0	20224	3.2	89.0	0.0	31.3
Paradip	3939	1343	0	5282	568	7258	0	7826	4507	8601	0	13108	12.6	84.4	0.0	59.7
Visakhapatnam	12434	6406	3673	22513	2943	7145	3052	13140	15377	13551	6725	35653	19.1	52.7	45.4	36.9
Chennai	7812	8626	777	17215	16501	707	778	17986	24313	9333	1555	35201	67.9	7.6	50.0	51.1
Tuticorin	3342	1628	0	4970	5143	37	0	5180	8485	1665	0	10150	60.6	2.2	0.0	51.0
Cochin	6558	768	0	7326	3800	1539	0	5339	10358	2307	0	12665	36.7	66.7	0.0	42.2
New Mangalore	6552	5120	15	11687	342	2158	19	2519	6894	7278	34	14206	5.0	29.7	55.9	17.7
Mormugao	1755	15335	24	17114	781	125	0	906	2536	15460	24	18020	30.8	0.8	0.0	5.0
Mumbai**	17521	5052	45	22618	1618	6734	0	8352	19139	11786	45	30970	8.5	57.1	0.0	27.0
JNPT	6506	4256	48	10810	841	47	25	913	7347	4303	73	11723	11.4	1.1	34.2	7.8
Kandla	28896	4023	2730	35649	4831	157	0	4988	33727	4180	2730	40637	14.3	3.8	0.0	12.3
All Major Ports	110853	54205	10820	175878	39927	32024	3891	75842	150780	86229	14711	251720	26.5	37.1	26.4	30.1
GMB#																
Magdalla	4515	571	0	5086	3081	702	0	3783	7596	1273	0	8869	40.6	55.1	0.0	42.7
Mul-Dwarka	414	439	0	853		1217	0	1217	414	1656	0	2070	0.0	73.5	0.0	58.8
Jafrabad	524	1746	0	2270		601	0	601	524	2347	0	2871	0.0	25.6	0.0	20.9
Other Ports of GMB	7976	2463	0	10439	417	343	0	760	8393	2806	0	11199	5.0	12.2	0.0	6.8
All Ports of GMB	13429	5219	0	18648	3498	2863	0	6361	16927	8082	0	25009	20.7	35.4	0.0	25.4
All Major Ports and GMB Ports	124282	59424	10820	194526	43425	34887	3891	82203	167707	94311	14711	276729	25.9	37.0	26.4	29.7
Non-GMB Minor and Intermediate Ports*	2360	3113	0	5473	2716	2452	0	5168	5076	5565	0	10641	53.5	44.1	0.0	48.6
All India Traffic	126642	62537	10820	199999	46141	37339	3891	87371	172783	99876	14711	287370	26.7	37.4	26.4	30.4

** Break-up of transhipment cargo not available

@ Major Ports of India: A Profile, 1998-99, Indian Ports Association

Administration Report, 1998-99, Gujarat Maritime Board

* Basic Port Statistics of India, 1998-99, Ministry of Surface Transport

Exhibit 5

Profile of Ports with Significant Coastal Traffic, 1997-98

Haldia (Loaded Coastal to Total Loaded Cargo is 91.4%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
Coal/Coke	4.1	68.3	68.3	8.9	2.7	22898
POL (Product)	1.9	31.7	100.0	4.2	2.6	17531
Other Cargo	0.0	0.0	100.0			
Total	6.0					

Paradip (Loaded Coastal to Total Loaded Cargo is 83.0%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
Coal/Coke	6.1	85.9	85.9	4.8	0.8	27766
POL (Product)	0.6	8.5	94.4	4.5	3.4	9935
Iron Ore (Raw/Pellets)	0.4	5.6	100.0	5.3	2.3	43214
Other Cargo	0.0	0.0	100.0			
Total	7.1					

Cochin (Loaded Coastal to Total Loaded Cargo is 65.2%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Product)	1.5	100.0	100.0	4.3	2.1	29661
Other Cargo	*	0.0	100.0			
Total	1.5					

Mumbai (Loaded Coastal to Total Loaded Cargo is 64.3%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Crude)	6.7	88.2	88.2	5.6	2.5	33057
POL (Product)	0.9	11.8	100.0	5.6	2.5	33057
Other Cargo	*	0.0	100.0			
Total	7.6					

Exhibit 5...Continued

Visakhapatnam (Loaded Coastal to Total Loaded Cargo is 54.5%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
Iron Ore (Raw/Pellets)	1.9	25.7	25.7	7.0	2.4	68220
Coal/Coke	4.0	54.1	79.7	11.6	5.2	33286
POL (Product)	0.1	1.4	81.1	2.3	0.6	23320
Other Cargo	1.4	18.9	100.0			
Total	7.4					

New Mangalore (Loaded Coastal to Total Loaded Cargo is 37.7%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Product)	2.3	85.2	85.2	2.7	1.3	22839
Iron Ore (Raw/Pellets)	0.4	14.8	100.0	3.0	1.4	45062
Other Cargo	0.0	0.0	100.0			
Total	2.7					

Tuticorin (Unloaded Coastal to Total Unloaded Cargo is 66.3%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
Coal/Coke	5.2	92.9	92.9	5.1	1.1	12000
POL (Product)	0.4	7.1	100.0	2.8	0.8	7651
Other Cargo	*	0.0	100.0			
Total	5.6					

Calcutta (Unloaded Coastal to Total Unloaded Cargo is 47.7%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Product)	2.0	90.9	90.9	4.1	1.1	8837.0
Other Cargo	0.2	9.1	100.0			
Total	2.2					

Exhibit 5...Continued

Chennai (Unloaded Coastal to Total Unloaded Cargo is 46.5%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
Coal/Coke	8.6	76.8	76.8	13.2	6.9	19762
POL (Crude)	2.6	23.2	100.0	7.4	5.3	30010
POL (Product)	*	0.0	100.0	7.4	5.3	30010
Other Cargo	*	0.0	100.0			
Total	11.2					

Cochin (Unloaded Coastal to Total Unloaded Cargo is 41.8%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Crude)	4.1	97.6	97.6	4.3	2.1	29661
POL (Product)	0.1	2.4	100.0	4.3	2.1	29661
Other Cargo	*	0.0	100.0			
Total	4.2					

Visakhapatnam (Unloaded Coastal to Total Unloaded Cargo is 38.6%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Crude)	3.3	55.9	55.9	2.3	0.6	23320
POL (Product)	2.2	37.3	93.2	2.3	0.6	23320
Iron Ore (Raw/Pellets)	0.4	6.8	100.0	7.0	2.4	68220
Other Cargo	*	0.0	100.0			
Total	5.9					

Mormugao (Unloaded Coastal to Total Unloaded Cargo is 33.8%)

Commodity	Unloaded Coastal (mt)	% of Unloaded	Cumu-lative %	Avg Turn-Round Time (days)	Avg Pre-Berthing Time (days)	Avg Parcel Size (tonnes)
POL (Product)	0.8	100.0	100.0	2.4	0.9	7277
Other Cargo	*	0.0	100.0			
Total	0.8					

Major Ports of India: A Profile, 1998-99, Indian Ports Association

Exhibit 6

Profile of GMB Ports and Coastal Traffic, 1997-98

Mul-Dwarka (Loaded Coastal to Total Loaded Cargo is 56.9%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumulative %
Cement	0.8	100.0	100.0
Total	0.8		

Jafrabad (Loaded Coastal to Total Loaded Cargo is 39.4%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumulative %
Clinker	0.7	100.0	100.0
Total	0.7		

Magdalla (Loaded Coastal to Total Loaded Cargo is 37.3%)

Commodity	Loaded Coastal (mt)	% of Loaded	Cumulative %
Iron Ore	0.4	40.0	40.0
Other Cargo	0.6	60.0	100.0
Total	1.0		

Magdalla (Unloaded Coastal to Total Unloaded Cargo is 46.5%)

Commodity	Unloaded Coastal (mt)	% of Loaded	Cumulative %
Iron Ore	2.6	76.5	76.5
Clinker	0.4	11.8	88.2
Cement	0.3	8.8	97.1
Other Cargo	0.1	2.9	100.0
Total	3.4		

Okha (Unloaded Coastal to Total Unloaded Cargo is 25.9%)

Commodity	Unloaded Coastal (mt)	% of Loaded	Cumulative %
Furnace Oil	0.2	66.7	66.7
Coal	0.1	33.3	100.0
Total	0.3		

Exhibit 6...Continued

Coastal Export Cargo Movement

('000 tonnes)

Exported to	Port of Export												
	Mul-Dwarka	Jafrabad	Magdalla	Okha	Sikka	Mandvi	Jakhau	Pipavav (GPPL)	Veraval	Porban-dar	Mahuva	Gogha	Total
WEST COAST													
Maharashtra	509	277	52	15	-	-	-	23	6	10	1	1	894
Gujarat	281	419	69	-	-	-	23	-	-	-	-	-	792
Kerala	17	-	-	48	-	-	-	-	13	-	-	-	78
Goa	-	-	62	2	-	-	-	-	-	-	-	-	64
Karnataka	-	-	-	-	-	25	-	-	1	1	-	-	27
EAST COAST													
Andhra Pradesh	-	-	389	-	-	-	-	-	-	-	-	-	389
Tamilnadu	-	-	14	-	-	-	-	-	-	-	-	-	14
West Bengal	-	-	14	-	-	-	-	-	-	-	-	-	14
Other States	-	-	-	-	54	-	-	-	-	-	-	-	54
Total	807	696	600	65	54	25	23	23	20	11	1	1	2326

Coastal Import Cargo Movement

Imported from	Port of Import							
	Magdalla	Okha	Porbandar	Bedi	Sikka	Veraval	Pipavav (GPPL)	Total
WEST COAST								
Gujarat	691	15	-	-	-	1	-	707
Goa	143	77	9	-	-	-	-	229
Maharashtra	55	52	-	-	-	-	-	107
Kerala	1	10	-	-	-	-	-	11
EAST COAST								
Andhra Pradesh	2273	-	-	50	-		-	2323
Orissa	211	-	69	-	-	-	-	280
West Bengal	-	154	-	-	-	-	-	154
Other States	-	-	-	-	11	-	-	11
Total	3374	308	78	50	11	1	0	3822

Administration Report, 1997-98, Gujarat Maritime Board

Exhibit 7

Growth of Indian Shipping

Year	Coastal			Overseas			Total			% of coastal to total		
	No of vessels	GRT ('000)	Avg GRT ('000)	No of vessels	GRT ('000)	Avg GRT ('000)	No of vessels	GRT ('000)	Avg GRT ('000)	No of vessels	GRT ('000)	Avg GRT ('000)
1960-61	104	362	3.5	70	539	7.7	174	901	5.2	59.8	40.2	67.2
1970-71	62	218	3.5	193	2282	11.8	255	2500	9.8	24.3	8.7	35.9
1980-81	65	300	4.6	338	5589	16.5	403	5889	14.6	16.1	5.1	31.6
1990-91	169	561	3.3	246	5378	21.9	415	5939	14.3	40.7	9.4	23.2
1991-92	187	640	3.4	254	5648	22.2	441	6288	14.3	42.4	10.2	24.0
1992-93	202	642	3.2	241	5625	23.3	443	6267	14.1	45.6	10.2	22.5
1993-94	206	681	3.3	231	5665	24.5	437	6346	14.5	47.1	10.7	22.8
1994-95	219	698	3.2	251	6304	25.1	470	7002	14.9	46.6	10.0	21.4
1995-96	231	705	3.1	253	6347	25.1	484	7052	14.6	47.7	10.0	20.9
1996-97	232	654	2.8	244	6224	25.5	476	6878	14.4	48.7	9.5	19.5
1997-98	247	654	2.6	237	6131	25.9	484	6785	14.0	51.0	9.6	18.9
1998-99	269	680	2.5	241	6373	26.4	510	7053	13.8	52.7	9.6	18.3

Annual Report of Ministry of Surface Transport, 1999-2000

Exhibit 8

Growth of Coastal Fleet - by Type

Year	Tonnage (' 000 GRT)				
	Dry Cargo*	Oil Tanker @	Passenger-cum-Cargo	Off-Shore Supply **	Total
1950-51	NA	NA	NA	-	217
1960-61	338	24	-	-	362
1970-71	139	49	30	-	218
1980-81	119	153	28	-	300
1990-91	156	193	49	163	561
1991-92	268	155	59	158	640
1992-93	253 #	154	59	176	642
1993-94	297 #	150	60	174	681
1994-95	310 #	156	60	172	698
1995-96	286 #	196	53	170	705
1996-97	303 #	138	52	161	654
1997-98	272 #	180	53	149	654
1998-99***	269 #	206	53	135	663

* Including Bulk Carriers and Timber Carrier
@ Includes Specialized Vessels for off-shore services
**Includes Ethylene Gas Carrier &Ro-Ro and dredges
Includes Tugs
NA Not Available
*** Annual Report of Ministry of Surface Transport, 1999-2000

Indian Shipping Statistics, 1999, Ministry of Surface Transport

Exhibit 9

Profile of Coastal Vessels, September 1999

Type of Vessels	No of Vessels	GRT	DWT	Avg GRT	Avg DWT
Dry Cargo	49	54372	83900	1109.6	1712.2
Tug	55	17677	3261	321.4	59.3
Dry Cargo (Bulk Carriers)	12	193614	305827	16134.5	25485.6
Tankers (Product Carriers)	11	80038	132042	7276.2	12003.8
Tankers (Crude Oil Carriers)	2	50080	82249	25040.0	41124.5
Passenger-cum-Cargo	10	52104	23232	5210.4	2323.2
Passenger Service	6	1218	45	203.0	7.5
Timber Carriers	1	4356	6579	4356.0	6579.0
Ethylene Gas	3	8725	6960	2908.3	2320.0
Ro-Ro	1	956	1386	956.0	1386.0
Dredgers	13	55263	0	4251.0	0.0
	163	518403	645481	3180.4	3960.0
Off-shore Supply Vessel	67	70521	78646	1052.6	1173.8
Specialized Vessels for Off-shore Services	26	76380	56718	2937.7	2181.5
	93	146901	135364	1579.6	1455.5
Grand Total (Vessels) Coastal Trade	256	665304	780845	2598.8	3050.2

Annual Report of Ministry of Surface Transport, 1999-2000

Agewise Share of Indian Tonnage

(in years)

Year	Proportion of Indian Tonnage														
	Overseas					Coastal					Total				
	<5	6-15	16-20	>20	Total	<5	6-15	16-20	>20	Total	<5	6-15	16-20	>20	Total
1990-91	8.5	52.8	34.6	4.1	100.0	12.7	53.6	26.6	7.1	100.0	8.9	52.9	33.8	4.4	100.0
1991-92	11.8	48.2	36.3	3.7	100.0	16.1	47.7	27.3	8.9	100.0	12.2	48.2	35.4	4.2	100.0
1992-93	14.0	44.5	34.9	6.6	100.0	10.9	50.9	25.9	12.3	100.0	13.7	45.2	34.0	7.1	100.0
1993-94	18.3	44.1	28.3	9.3	100.0	8.7	48.3	18.5	24.5	100.0	17.3	44.5	27.2	11.0	100.0
1994-95	18.1	45.8	21.3	14.8	100.0	7.4	48.9	10.3	33.4	100.0	17.1	46.1	20.2	16.6	100.0
1995-96	14.3	48.6	18.8	18.3	100.0	4.8	46.7	15.5	33.0	100.0	13.4	48.4	18.5	19.7	100.0
1996-97	11.4	48.5	19.8	20.3	100.0	5.0	43.0	21.6	30.4	100.0	10.8	48.0	19.9	21.3	100.0
1997-98	11.1	43.6	19.3	26.0	100.0	4.6	41.7	24.5	29.2	100.0	10.4	43.5	19.8	26.3	100.0

Indian Shipping Statistics, 1999, Ministry of Surface Transport

Exhibit 11

Companywise Coastal Fleet, 1997

Number of Vessels-wise

Sr No	Name of the Company/Shipowner	No of Vessels	Total GRT ('000)
1	ONGC	44	88.0
2	SCI	18	118.0
3	M/s Dredging Corporation of India	11	44.0
4	GESCO	11	21.1
5	M/s Essar Shipping	10	27.8
6	Reliance Industries Ltd, Mumbai	10	25.1
7	Admn of U T of Lakshadweep	7	10.2
8	Others	121	319.8
	Total	232	654.0

Indian Shipping Statistics, 1998, Ministry of Surface Transport

Tonnage-wise

Sr No	Name of the Company/Shipowner	No of Vessels	Total GRT ('000)
1	SCI	18	118.0
2	ONGC	44	88.0
3	M/s Poompuhar Shipping	3	84.0
4	Sesa Shipping (P) Ltd	2	46.2
5	M/s Dredging Corporation of India	11	44.0
6	A & N Administration	4	33.6
7	M/s Chowgule Steamships Co Ltd	6	29.4
8	M/s Essar Shipping	10	27.8
9	Reliance Industries Ltd, Mumbai	10	25.1
10	V M Salgaonkar & Brothers Ltd	2	22.6
11	GESCO	11	21.1
12	Salgaonkar Engineers (P) Ltd	1	12.2
13	Admn of U T of Lakshadweep	7	10.2
14	Peerless Drive Ltd	3	10.2
15	Vikram Ispat	5	7.7
16	Others	95	73.9
	Total	232	654.0

Indian Shipping Statistics, 1998, Ministry of Surface Transport

Exhibit 12


Sea Ports in India
N
AFGHANISTAN
PAKISTAN
CHINA
(TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
(BURMA)
LAOS
THAILAND
SRI LANKA
INDIAN OCEAN
ARABIAN SEA
BAY OF BENGAL
JAMMU & KASHMIR
Srinagar
HIMACHAL PRADESH
PUNJAB
Shimla
HARYANA
Chandigarh
DELHI
ARUNACHAL PRADESH
Itanagar
MEGHALAYA
SIKKIM
Gangtok
UTTAR PRADESH
RAJASTHAN
Jaipur
Lucknow
Patna
BIHAR
ASSAM
Dispur
Shillong
NAGALAND
Kohima
Imphal
MANIPUR
Aizawl
MIZORAM
TRIPURA
Agartala
WEST BENGAL
Calcutta-Haldia
Paradwip
ORISSA
Bhubaneshwar
GOPALPUR
Bhopal
MADHYA PRADESH
GAPL
Kandla
Gandhinagar
GUJARAT
PORBANDAR
GPPL
DIU
DAMAN
MAGDALLA
DADRA & NAGAR HAVELI
Mumbai
Jawaharlal Nehru Port
MAHARASHTRA
RATNAGIRI
Hyderabad
Vishakhapatnam
KAKINADA
YANAM (Pondicherry)
ANDHRA PRADESH
KRISHNAPATNAM
Panaji
Marmagao
GOA
KARWAR
KARNATAKA
Mangalore
Bangalore
Chennai(Madras)
PONDICHERRY (Puduchcheri)
CUDDALORE
KARAIKAL (Pondicherry)
TAMIL NADU
MAHE (Pondicherry)
MAHE
Kavaratti
LAKSHADWEEP
Cochin (Kochi)
KERALA
Thiruvananthapuram
Tuticorin
Port Blair
ANDAMAN & NICOBAR ISLANDS
Map not to Scale
State Capital
Major Seaport
Additional Coastal Ports

Exhibit 13

Analysis for Requirement of Ships and Jetties

Assumptions:

- The total coastal traffic of general cargo (excluding coal, POL and crude, and iron ore and pellets) is about 50 mt/ year.
- Coastal cargo is shipped in small vessels of about 3,000 tonnes.
- Average speed of a ship is 10 knots/hour (25 km/hour).
- The average lead is about 2,000 kms.
- The average loading/unloading rate is 200 tonnes/hour.
- Average jetty capacity utilization is 80%.
- Average no of working days for a jetty is 300/year.
- Average no of working days for a ship is 300/year.

Calculations:

- The one-way journey time is 2,000/25 = 80 hours, say 4 days
- The loading/unloading time is 3,000/200 = 15 hours, say 1 day
- The pre-berthing time is a maximum of 1 day

- The cycle time for one round trip is 2 * (4 + 1+ 1) = 12 days

Analysis:

Number of ships required:

Number of trips = 50,000,000/3,000 = 16667 trips
Total ship days = 16,667 trips * 12 days = 2,00,000 days
Total number of ships = 2,00,000/300 = 667 ships

Number of jetties required:

Number of port visits = 16,667 trips * 2 = 33,334 visits
Total jetty days = 33,334 visits * 1 day = 33,334 days
Total number of jetties (at 100% capacity utilization) = 33,334/300 = 111 jetties
Total number of jetties (at 80% capacity utilization) = 111/0.80 = 140 jetties (approx)

Assuming 20 ports along the coastline (including the major ports), each port needs to have an average of seven jetties for coastal general cargo traffic.

(It has also been verified by a queuing model that with the above average jetty capacity, loading/unloading rates and average number of ship visits at each port, the assumed pre-berthing time would be consistent.)

Source: Author's Analysis

Appendix 1

Mode Choice Analysis for Laxmi Transformers Sponge Iron Plant Located at Alibag[1].

Decision Areas (1)

- Inbound mode and shipment size choice
- Outbound which markets to serve and how much
  - Mode choice
  - Stockyard location
- Siding or not
- How many barges to hire
  - Which months

GRAIMA

Raw Material Requirement (2)

- Capacity DRI plant = 500,000 tonnes/year
- One tonne requires
  - Pellets = 1.24 tonnes/tonne of DRI
  - Lump ore = 0.31 tonnes/tonne of DRI
- Total R/M requirement
  - Pellets = 620,000 tonnes
  - Lump ore = 155,000 tonnes

GRAIMA

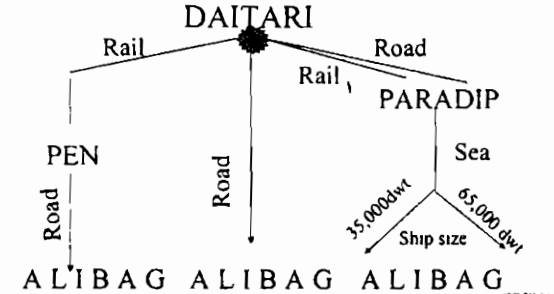
Sources for Inbound Movement (3)

- Pellets from Mangalore
- Lump ore obtained from other mines

	%	Tonnes	Price (Rs/tonne)
Daitari (Orissa)	40	62,000	250
Banspani (Orissa)	40	62,000	250
Goa	20	31,000	330

GRAIMA

Alternatives for Inbound Movement (4)



GRAIMA

Criteria (5)

- Transportation cost
- Inventory cost
  - Cycle stock due to shipment size
  - Buffer stock
  - Pipeline
  - Stock due to seasonality of operations
- Handling cost
- Stockyard cost
- Availability of transport
- Flexibility for growth
- Reliability

GRAIMA

Inbound Movement Cost from Daitari by Rail (6)

Mode	km	Cost/tonne	Transport cost
Rail to Pen	2200	Rs 517.5	Rs 3.21 cr
Road to Alibag	15	Rs 7.5	Rs 0.05 cr
Total		Rs 525	Rs 3.25 cr

GRAIMA

[1] The name of the company and the location have been changed. The analysis has been done for the mid nineties.

Inbound Movement Cost by Sea from Paradip (7)

Dwt	=	35,000	65,000
Pay load	=	34,000 tonnes	64,000 tonnes
Travel time	=	14 days (7+7)	15 days (7.5+7.5)
Port time	=	13 days (5+8)	17 days (6+11)
Cycle time	=	27 days	32 days

GR/IIMA

Inbound Movement Cost by Sea (35,000dwt ship) from Paradip (8)

Heads	(Rupees)	
Fuel cost	1,575,000	(Voyage)
	195,000	(Port)
Port dues	380,000	Total cost/trip
Loading ch	1,360,000	Rs 0.805 cr
Unloading ch	510,000	Rs 260.3/tonne
Barge ch	400,000	(Total cost/two trips
Dchg port due	300,000	Rs 1.61 cr)
Standing ch	4,131,000	

GR/IIMA

Total Transportation Cost for Various Modes from Daitari (9)

(Rs crores)

1. DAITARI Rail PEN Road ALIBAG = 3.25
2. DAITARI Road ALIBAG = 5.52
3. DAITARI Rail PDIP Sea ALIBAG = 1.99
   0.38 SHIP 35000 dwt 1.61
4. DAITARI Rail PDIP Sea ALIBAG = 1.84
   0.38 SHIP 65000 dwt 1.46

(DAITARI Road PDIP 0.47)

GR/IIMA

Cost Comparison Across Ship Size and Rail (10)

Ship size (dwt)	Transport cost (Rs crore)	Inventory cost (Rs crore)	Cost/tonne (Rs)
35,000	1.99	0.22	356 + extra handling + buffer stock
65,000	1.84	0.39	359 + extra handling +buffer stock
Rail	3.25	Relatively negligible	522 + extra handling+ buffer stock

Other costs were negligible

GR/IIMA

Best Alternative (Min Cost) from Each Source (11)

a.DAITARI Rail PDIP Sea ALIBAG
SHIP 35,000 dwt

b.B'PANI Rail PDIP Sea ALIBAG
SHIP 35,000 dwt

c. GOA Rail M'GAO Sea ALIBAG
SHIP 35,000 dwt/barges

d. M'LORE Sea A'BAG
SHIP 35,000 dwt

GR/IIMA

Transportation Cost for Outbound (12)

(Rupees/tonne)

Mode	500km	1,000km	1,500km
Road(70 p/tonne km)	350	700	1050
Rail	197.7	382.2	544.2
Sea Outbound additional cost about (Over an inbound cost of 260)			140

GR/IIMA

Source: Raghuram G, (Unpublished) Case Analysis of Laxmi Transformers, Indian Institute of Management, 1996

Appendix 2

'Keshuvision' Sans Higher Education!! **TOI, 13/07/00**
Ahmedabad

The BJP ruling circles have learnt to talk big. Not a day passes without one or two bombastic declarations.

They take pride in announcing development of some ports lying barren on the 1, 600 km long coastline with private or foreign investment. Gujarat Maritime Board's executive officer PN Roy Chaudhary once described the new 1995 port policy as " Keshuvision"!

Some of the foreign companies coming for the purpose are Shell, Gas de France, LNG Petronet at Hazira and Port Authority of Singapore at Pipavav. Gujarat is handling 35% of the national sea traffic. Nobody knows how they are going to solve the disastrous after-effect of some of these projects on environment.

But most neglected are the higher marine and oceanology or fisheries education faculties, to be structured in Saurashtra and Bhavnagar Universities or at South Gujarat University. It's a common knowledge that lakhs of people living in the coastal area survive on fishing business. But no future plans or project has so far taken care of this thriving business, nor has been taken to develop traditional method of fishing.

No vision will be complete without an expansion of higher educational facilities for coastal development. Dr. Vidyut Joshi, former vice-chancellor of Bhavnagar University, who coined the word "Silver Corridor" for the industrial development potential of our coastline, goes even further and says that higher education institutions in Saurashtra and South Gujarat must be identified with faculties for fisheries, port-engineering, oceanography and marine technology.

One has only to glance at our fishermen's traditional ways and their daredevil fishing method, putting their own and their ships' life in great danger. Recently a big shipping boat belonging to a fisherman's family at Ghogha and sailing towards Mumbai just got sunk in the high-sea storm. No trace was found and no insurance or bank company came forward to take care of this big loss, neither did the government even take note of it!

So far, no IAS official or minister or 2010 vision talks of such a new highly essential approach, nor anyone of them has drawn out a plan to build different kind of character for these three universities mentioned above. Higher educational facilities are provided by self financial trusts or private companies like Nirma. Some of these trusts have flourished beyond imagination by charging exorbitant fees for obsolete courses while denying some of the essential modern facilities to students.

Nowhere we see a new biotech or value-added agrarian or marine technology course being launched except, to some extent, in Bhavnagar University, which has a Department on Oceanography, courtesy Dr Joshi who succeeded in convincing the UGC to allocate money for that. Most shocking is the fact that no academic or administrative linkage has been provided for a prestigious scientific institution like Salt Research Institute at Bhavnagar. As a result, invaluable research done there for desalinization of ocean water or power generation from the waves, has been gathering dust since almost 10 years. Technically, our bureaucrats see things in a most narrow and departmental perspective. You make a point to them and they will readily come out with a retort that "this belongs to education ministry." When you hit the education ministry, those sitting tight over its policy would say, "No sir, it does not fall under our jurisdiction...It's the fisheries or port section that has to deal with it."

In any case, higher education remains at doldrums in Gujarat while lots of new capital for rapid industrialization is coming. It's wrong to argue that this downfall of education is caused by lack of enough budgetary allocation. This is partly true, but money comes when vision or leadership is provided. It's a matter of shame that Gujarat is still riding on the waves of arts, commerce or chemicals while certain vital subjects relating to globalization or industrialization remain untouched.

- Batuk Vora

Appendix 3

Desired Services for Mode Choice Along the West Coast

(South to North)

Sr No	Organisation	Product	Market/ Customer	Volume	Current Mode Mix	Key Services Desired
1	FACT	Caprolactum, Fertilisers	Mumbai, Gwalior, AP, Karnataka, TN Kerala	36500 tons pa	Road for Caprolactum Rail for Fertilisers	Low Prices Low Freight Charge
2	IPL	Fertilisers	Entire Eastern India	Significant	Road/Rail	Low Freight Charge
3	Rubber Board	Rubber	Cochin, Mumbai, Rajasthan	5 lakh tons pa	Road	Door to door delivery, Insurance, Safety, Quick transit time
4	Rubber Mark	Rubber	North & East India	1.5 lakh tons pa	Road	Door to door delivery, Insurance, Safety, Price, Quick transit time
5	TTPL	Titanium dioxide	Bombay, Gujarat	5760 tons pa	Road	Door to door delivery, Reliability, Price
6	EICL	Kaolin	North, West & South	42000 tons (for north & west) pa	Road/Rail	Cost, Door to door delivery, Better tracking, Single window

(North to South)

Sr No	Organisation	Product	Market/ Customer	Volume	Current Mode Mix	Key Services Desired
1	FCI	Foodgrains	Palghat	Significant	Rail	Price
2	Godrej GE	White goods	South Indian market	Significant plus subsequent advantages in the form of other sister concerns using rail	Own containers Road/Rail	Containerisation Safety, Speed, Cost
3	DCW	Salt & Atta	All India for the Gandhidham plant	1.5 lakh tons pa	Road	Rake, Single window
4	Ceat	Tyres	Cochin for raw materials & all India for finished Products	36000 tons pa	Road	Cost, Door to door service
5	Gujarat Ambuja	Cement	Gujarat, Maharashtra & Kerala	60-72 rakes pa	Coastal Vessels	Damages in monsoon will b saved
6	M&M	Utility vehicles	All India	30% of the total production	Rail & road	Bulk : Economies of scale
7	Asian Paints	Paint besides raw materials including Titanium dioxide	All India	Significant	Road	Value added services in the form of Door t door delivery, Quick transit, Insurance etc.

Source: Banerjee Bibek, Raghuram G and Rangaraj N, 'Konkan Railway Corporation Limited,' *Vikalpa: The Journal For Decision Makers*, Volume 25/Number 1, January-March 2000

Appendix 4

Summary of Important Recommendations of the Working Group on Coastal Shipping (a Committee Constituted by the Government), 1993:

Procedural

1. Coastal shipping should be removed from the purview of strict day to day control of Customs Act, 1962 and should not be subject to any customs control like any other mode of domestic transport though customs authorities should have the full right to board an0y coastal ship, at any time, if they have reason to suspect smuggling activity.

2. Till recommendation no.1 is accepted, the bill of coastal goods which is analogous to railway receipt/road receipt, that gives only a description of goods should serve the purpose as already provided in regulation 2/section 92 of the Customs Act, 1962 at loading and unloading ports.

3. A manifest in the nature of single document serving all the consignees should ultimately replace the bill of coastal goods. This is as mutually decided between shipowners/operators and customs.

4. A periodic port clearance should be given to coastal ships serving on dedicated coastal routes extending up to one year by the customs.

5. The single-addressee format as devised by the working group should be brought into force that will satisfy the requirements of all authorities concerned on whose behalf the customs insist upon a multiplicity of documents as at present before issuing port clearance.

6. The Port Officer of the loading port, instead of the customs, should be the last agency on behalf of the various statutory authorities involved in the issue of port clearance, who should be responsible for receiving the Single Addressee Condensed Format.

7. All the port and other dues payable by the coastal shipping should be collected by the port officer concerned as the last clearing agency on behalf of other departments.

Manning

8. The manning scales applicable to the coastal shipping at present should be brought down considering that for a pure coastal ship, port state control may not be applicable and the safety aspect as applicable to foreign going ships need not be applicable.

Infrastructural

9. The pamban channel south of Tamil Nadu should be widened and deepened so as to facilitate movement of coastal vessels of the size of about 3000 tonnes avoiding circumnavigation around Sri Lanka. This should result in saving in terms of fuel costs

and standing charges associated with extra period of voyages, making coastal shipping more competitive.

10. Private entrepreneurs/parties should be allowed to participate in development of minor ports and invest funds, which could be allowed to be recovered through appropriate levies in a reasonable way.

11. The central government should provide funds for development of minor ports unto a threshold level, which can further give impetus to coastal shipping. The minimum level of development should include provision of sheds, deepening of berth area and navigational channels by dredging, handling equipment etc. To start with, Gopalpur, Krishnapatnam, Cuddalore, Nagapattinam, Karwar, and Old Mangalore could be allotted funds. (*It is interesting that the committee did not recommend any ports in Gujarat or Maharashtra, presumably because these states have already made plans to develop their minor port infrastructure.*)

Fiscal

12. Coastal shipping should be given following concessions to make them financially viable:
    (a) Increase depreciation rates from present 20 per cent to 33.33 per cent under the Income Tax Act.
    (b) Tax holidays for coastal shipping specially the ro-ro vessels as these were highly environmental friendly.
    (c) Exemptions from customs duty on import of spares for coastal ships.
    (d) Concession in bunker supply to coastal ships/ro-ro vessels.

Source: Ministry Of Surface Transport, *Report Of The Working Group On Development Of Coastal Shipping*, 1993

Appendix 5

Gujarat Maritime Board

Gujarat is a principal maritime State, blessed with a natural coastline of approximately 1600 kms, which constitutes about one fourth of the total coastline of the country.

The Gujarat Maritime Board (GMB) was established under legislation in 1982 as an autonomous nodal maritime authority for the state, reporting to the Department of Ports and Fisheries. In accordance with the Gujarat Act No 30 of 1981, the State Government has handed over the administration, management and control of the intermediate and minor ports of the state to GMB.

The State of Gujarat has 40 intermediate and minor ports, which are under the purview of GMB since April 1982. Out of the 40 ports, 14 ports are classified as intermediate ports and 26 as minor ports. The GMB ports handled a total of 25.08 mmt of cargo in 1998-99, accounting to about 70% of the traffic handled by all minor/intermediate ports in the country and 8.7% of the total traffic through Indian ports. Nearly 72% of this traffic was handled by just 6 ports, namely, Magdalla, Jafrabad, Mul Dwarda, Bedi, Okha and Sikka.

In 1998-99, GMB had an operating income of Rs 158 crores, with and expenditure of Rs 74 crores. The capital expenditure of 32 crores was completely met from the operating surplus.

The profile of the significant minor/intermediate ports as of 1998-99 was:

Port	Total Traffic (mt)	Coastal Traffic (mt)	Direct Berthing	Rail Connection
Magdalla	8.87	3.78	Yes	Yes, for the Northern jetties
Jafrabad	2.87	0.60	Yes	No
Mul-Dwarka	2.07	1.22	Yes	No
Bedi	1.48	-	No	Yes
Okha	1.47	0.27	Yes	Yes
Sikka	1.22	0.14	Yes	Yes
Other Ports	7.11	0.35	-	-
Total	25.08	6.36	-	-

The distribution of traffic in mt on the basis of the category of the port as of 1998-99 was:

1	Direct Berthing Ports	6.15
2	Lighterage Ports	4.32
3	Captive Jetties	
	Group of Magdalla Port – Hazira/Magdalla	8.61
	Group of Veraval Port – Mul-Dwarka	2.07
4	Ship Breaking (LDT*)	3.07
5	Private Ports	
	Pipavav Port (GPPL)	0.62
	Mundra Port (GAPL)	0.24
	Total	25.08

GMB has participated in the development of the private ports mentioned above. These are at a take-off stage, with capacities up to 12 mt (GPPL) and 1.7 mt (GAPL). These ports are involved in developing rail based evacuation infrastructure. GPPL has signed an MoU with the Indian Railways for creating a special purpose vehicle which would construct/convert new/existing lines for a stretch of 290 kms and operate the same to provide access to the broad gauge mail line system. GAPL is privately developing a 50 km long rail siding to connect with the broad gauge mail line system

Source: Administration Report, 1998-99, Gujarat Maritime Board

Appendix 6

Cabotage Law in India – An International Comparison

Cabotage has been derived from the French word *cabot* meaning small vessel and refers to the set of rules and regulations that govern coastal shipping in a country. It usually takes shape in form of exclusive reservation by the State of commercial operations between ports in that country for their own national flag vessels. The broad purposes cited by all countries as raism-d-etre for such laws are to assure reliable domestic shipping services and the existence of maritime capability that is completely subject to national control in times of war and national emergency.

Cabotage laws are based on the following four parameters:

- Reservation of the trade for vessels **registered and flagged** in the same country
- Vessel **ownership** by a company incorporated in the same State and whose shareholders are c44itizens of the state
- Vessel **manned by crew** of same nationality
- Vessel **built and repaired** in yards belonging to the same State

Additionally, these laws could place reflagging restrictions where a vessel that had been flagged in a different registry in the past might not enjoy domestic trading privileges (as in US and Brazil) even after it is reflagged in the domestic registry. Subsidies could be extended to the shipowners in various direct and indirect forms to encourage participation in the domestic coastal trade.

1. **Cabotage laws in India:**

   The issues in Indian context are:

   - How stringent are Indian Cabotage laws vis-à-vis other countries?
   - Should BBCD vessels be allowed domestic trade privileges?
   - How much do the cabotage laws cost to the shippers in form of higher cost?
   - Cabotage laws are dredging

2. **Indian cabotage laws vis-à-vis other countries:**

   Cabotage Laws in India are governed by section 407 and 408 of Merchant Shipping Act, 1958. These regulations place restrictions on vessel flag and crew. While ownership restrictions were there till a few months back, recent decision by government to allow foreign direct investment of up to 74 per cent under the automatic route and even 100 per cent on a case to case basis has led to annulment of this clause.

   No restrictions are placed on place of built of the vessels, in contrast to cabotage laws in some countries as USA where only vessels built in US yards are eligible for domestic trade. An US-built vessel that is rebuilt overseas also loses its domestic trading privileges. Further, no direct or indirect subsidies are granted to ship owners involved in coastal trade.

Implementation of these laws is also lackadaisical. The S N Kakar Committee on Draft Coastal Shipping Act has observed that "...deployment of foreign vessels in our coasting trade is a regular occurrence and some quarters have alleged that this is taking place even when adequate number of Indian ships are available. This is perceived to deprive Indian vessels of opportunities of rightful participation in the coastal operations...."

The committee called for laying down of clear-cut guidelines for prohibiting employment of foreign flag vessels in India's coastal trade when Indian ships are available and for ensuring that foreign flag vessels are permitted to operate in coastal trade on case basis.

International comparison highlights that cabotage laws in India are in fact not very stringent compared to such countries as USA, Brazil, Greece and Japan. Even in case of other European Union countries like UK, national cabotage laws have given way to ones that encompass the EU region.

3. BBCD vessels and domestic coastal trade:

The cabotage laws in India are presently ambiguous with a large number of grey areas. The recent controversy relating to domestic trading provisions for Bare Boat Charter cum Demise (BBCD) vessels highlighted this. BBCD route was adopted few years back to help domestic shipping companies acquire vessels through an easier method of financing.

From the nation's prospective, exchange outgo instead of being outright, is through multiple installments spread over a period of time. While this does not seem pertinent today, but during the foreign exchange crisis in early 90s, this method was invaluable in achieving the twin objectives of tonnage enhancement and lower foreign exchange outgo.

Subsequent to this, a few foreign companies established operators in India and acquired vessels through the BBCD route taking advantage of the clause that allowed such vessels to be treated at par with Indian flag vessels for all purposes including preference in the shipment of government cargo and cabotage cargo on the India coast.

The matter came to boil last year when Indian Oil Corporation invited tenders from domestic shipping companies for transporting petroleum products along the Indian coast. In this, such companies offered competitive tenders, which was opposed by domestic shipowners.

Vessels were acquired through BBCD route not only by Pratibha Shipping (Norwegian Shareholding and Bahamas flagged vessels) and Amar Shipping but also by Essar and Varun, the beneficial ownership of the vessels lies with their subsidiaries in foreign countries and vessel flagged abroad (for example, Vanutu in case of Essar).

Should BBCD vessels be allowed domestic trade?

No, as far as the recent decision by the Ministry of Surface Transport is concerned. The arguments against BBCD vessels being they were foreign flagged and hence did not have to satisfy the stringent norms under Indian flag. As a result they are in position to offer more competitive quotations than Indian-flagged vessels. As a compromise with MoST, Pratibha Shipping would convert all their vessels to Indian flag to qualify for coastal shipping.

The M P Pinto led National Shipping Policy Committee has recommended that BBCD vessels in companies where foreign shareholding is more than 51% should not be eligible for cabotage.

Has cabotage laws led to complacency on part of Indian ship owners and hence deployment of BBCD vessels would provide the much needed competition to rejuvenate the sector? Indian coastal fleet has stagnated at 0.7 million tonnes GRT over the last one decade. The average age of the fleet in India is almost 20 years. The sector is unable to compete with railways and roads despite having a large number of inherent advantages.

Two years back, Tamil Nadu government owned Poompuhar Shipping Corporation responsible for transportation of coal for power plants under Tamil Nadu Electricity Board, filed a request with Director General of Shipping for hiring of foreign vessels alleging that Indian shipping lines act as a cartel to jack up charter rates.

Further, vessels are unable to meet the target discharge rates and thus operating below desired efficiency levels.

4. Higher costs to shippers

A study done in 1991 by US International Trade Commission found that Cabotage Laws in US cost the consumers around US$ 3 billion in form of higher prices.

Coastal trade in India is to the extent of around 45 million tonnes and thus shipping costs incurred are upward of US$ 600 million. Certain sections of the market feel that this cost could be reduced to the extent of atleast US$ 50 million.

Efficiency gains would have multiplier effects on the economy as a whole. Thus reduction in say transportation costs of coal to power plants in Tamil Nadu would lead to lower cost of electricity generated, leading to savings to residents of Tamil Nadu. Increased savings would lead to higher consumption and hence greater industrial activity in the region. Consumption would also receive a boost from lower cost of goods facilitated by lower cost of production due to lower electricity charges. Thus, savings in ocean freight would have multiplier effect on the economy as a whole.

However, supporters of cabotage law point that savings are possible only at the expense of sacrifice of national security and greater environmental risks. Tax on profits earned by the domestic shipowners goes to the government of India while in case of hiring of foreign vessels, tax income for the government is forfeited.

Presently, vessels in coastal trade are regulated under Merchant Shipping Act, 1958 and subjected to same rules and regulations like overseas vessels. The Kakar Committee on Coastal Shipping has recommended relaxation of several of these norms in such areas as manning, survey etc to reduce operating costs on running such vessels. The Committee has also recommended removal of custom duties on stores, spares and bunker. Implementation of such recommendations could lead to rectification of present problem of higher cost to shippers even while only domestic ships are allowed to ply.

5. Dredging industry:

Dredging industry also comes under the preview of Cabotage Laws. Removal of various restrictions on employment of foreign dredgers in India in 1992 has led to large multinationals like HAM, Boskali, Great Lakes etc setting up operators in the country. Foreign dredging companies handle around 30% of the total dredging of 55 million cubic meters carried out in major ports in India.

It has been observed by Indian National Shipowner's Association in their annual report 1998-99 that "...a number of foreign flag dredgers were being employed by the Indian ports without obtaining any permission or license from D G Shipping in disregard of the provisions of M S Act, thus depriving opportunity for employment to Indian dredgers."

Cabotage laws have always been highly controversial in any country. Recent attempts to modify them in United States have faced severe opposition. In India, there are numerous grey areas in cabotage laws and Ministry of Surface Transport should attempt to plug the loopholes.

	India	US A	Japan	Greece	Brazil	UK	Norway	China	France
Cabotage	Yes	Yes	Yes	Yes	Yes	Some	Some	Yes	Yes
Crewing requirements	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Ownership requirements	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Domestic construction provisions	No	Yes	No	No	Yes	No	No	No	No
Re-flagging restrictions	NA	Yes	Yes	NA	Yes	No	NA	Yes	NA
Fleet subsidies	No	No	Yes	No	Yes	Yes indirect	Yes	Yes indirect	Yes

Source: Maritime Monitor, Editorial, 'Cabotage Law In India – An International Comparison,' April 2000