

CHAPTER II : MINISTRY OF SHIPPING

2.1 Cargo Handling and Storage facilities at Major Ports

The overall existing capacity for cargo handling at major ports remained lower than estimated requirement. Berth occupancy was saturated. Utilisation of Port equipment was very poor, apart from other reasons due to very deficient maintenance and delays in getting the port equipment repaired. Additionally the port users preferred to use ships own gear and/or hired equipment. Mechanisation efforts varied as between different ports and its relation to increasing or decreasing commodity-wise demand was not clear. Mechanisation at certain ports showed a downward trend. There was insignificant progress in private sector participation to augment port facilities. Ports suffered losses on account of poor management of leasing contracts. Commercial management was poor as reflected in delays in proposing revision in scale of rates by certain ports, raising of bills and non-realisation of dues. Storage facilities were grossly under utilised and the income from storage, already very low, has further declined considerably over the review period. Bulk of the storage charges were accounted for by demurrage charges indicating inefficiency in management of operations.

Highlights

- Against an estimated capacity requirement to handle 325 million tonne the overall existing capacity of the ports was 271.51 million tonne in 2000-01.
- Ministry did not fix any norms for maintenance of fleet strength of equipment with reference to actual demand. The utilisation of equipment was very low during 1996-2001 ranging between 23.18 per cent and 26.33 per cent of available hours due to lack of demand from the port users who preferred to use ship's own gear and/or hired equipment.
 - ◆ The average fleet strength was much more than the average traffic demand during all the years under review in respect of Haldia Dock Complex (HDC), Mormugao Port Trust (MPT), Kandla Port Trust (KPT) and New Mangalore Port Trust (NMPT).
 - ◆ Failure of the Jawaharlal Nehru Port Trust (JNPT) to optimally utilise its own equipment led to an avoidable expenditure of Rs 26.70 crore on hiring of yard cranes from 1997-98 to 2000-01.

- **Hasty action taken by Chennai Port Trust (ChPT) on procurement of three wharf cranes resulted in blocking of Rs 30.55 crore with one crane remaining idle after taking over and two cranes remained to be formally handed over.**
- **There was wide variation between efforts at mechanisation as between different ports. MPT, ChPT and Tuticorin Port Trust (TPT) showed a negative trend towards mechanisation with 14.22, 3.76 and 31.94 *per cent* decrease respectively.**
- **There was limited progress in private sector participation and that too only in respect of five ports viz. Kolkata Port Trust (KoPT), Paradip Port Trust (PPT), ChPT, KPT and TPT. HDC's failure to prepare the bid document correctly in respect of a plan scheme for reconstruction of ore tippler 2 for handling additional coal traffic resulted in time-over-run of three years and cost-over-run of Rs 2.62 crore.**
 - ◆ **HDC leased out a berth on a minimum guaranteed throughput of only 0.55 million tonne per year to TISCO which was neither commensurate with the prevailing performance nor the capacity of the berth; it suffered a loss of Rs 19.05 crore on account of lower handling of cargo. In a lease with Steel Authority of India Limited (SAIL) of a similar berth the minimum guaranteed cargo was stipulated as 1.5 million tonne; an unrealised amount of Rs 41.82 crore due from SAIL went for arbitration.**
 - ◆ **Failure of JNPT to assert its right to royalties from date of commencement of operations in a Build Operate and Transfer (BOT) agreement for container terminal with Nhava Sheva International Container Terminal (NSICT) resulted in avoidable loss of revenue of Rs 19.20 lakh by the third year which would escalate to an additional loss of Rs 80.74 crore over the contract period.**
 - ◆ **PPT suffered loss of revenue of Rs 1.16 crore apart from wharfage for Rs 2.20 crore remaining unrealised in case of a berth leased out to Oswal Chemicals and Fertiliser Limited (OCFL).**
- **Utilisation of storage space under Major Port's own possession after lease/licence was only 29.14 *per cent* as of 31 March 2001.**
- **High proportion of storage income is on account of demurrage charges which is nothing but a rent earned by the inefficiencies of**

the whole logistics of port system and not due to any economic management.

- ◆ **In ChPT, in respect of open space/shed leased out/renewed, the premium and security deposit amounting to Rs 10.92 crore remained to be collected despite Ministry's guidelines issued in April 1995. Loss of revenue due to non-collection of the amount worked out to Rs 1.46 crore upto March 2000.**
- **Delays in proposing Scale of Rates for different commodities were found at HDC, PPT, TPT.**
 - ◆ **The extent of subsidy due to rates not being commensurate with costs for wharfage at KPT amounted to Rs 14.69 crore.**
 - ◆ **ChPT failed to recover licence fee as per provisions of Scale of Rates resulting in non collection of licence fee amounting to Rs 1.93 crore for the period from August 1994 to October 2001.**
- **Collection of dues was not vigorously pursued at certain ports.**
- **In Visakhapatnam Port Trust (VPT) iron ore handling charges for Rs 4.02 crore remained outstanding for long from Metal Minerals and Trading Corporation(MMTC).**
 - ◆ **Inaction of KPT to fix the rates and to collect deposit from Indian Oil Corporation (IOC) for the year 1998-99 immediately resulted in loss of revenue of Rs 7.10 crore.**

2.1.1 Introduction

India with nearly 6000 kilometre long coastline has 11 major ports and the primary responsibility for development and management of these ports rests with the Central Government. These ports are governed by the Major Port Trusts Act, 1963 which vests powers in a Board of Trustees (BoT) to conduct regulatory as well as commercial functions. The Act also empowers the Boards to involve private participation to augment facilities and increase the efficiency of the ports.

The purpose of the major ports is to serve the country's sea borne overseas and coastal trade and to provide effective services to the port users. One of the major objectives of ports is to provide facilities and services for quick, efficient and cost-effective transfer of cargo between inland and maritime transport system and vice-versa. Ports also have to arrange for smooth aggregation and dispersal of cargo between port and hinterland. Cargo handling and storage facilities, therefore, constitute the most important service rendered by the ports.

Short fall in cargo handled against the projection of Expert Committee.

The Expert Group on the commercialisation of infrastructure projects appointed by the Government of India in October 1994 estimated overall port traffic to reach around 390 million tonne by 2000-01 and over 650 million tonne by 2005-06 compared to this the actual are 259.52 million tonne in 2001-01.

Cargo handled by ports is divided into four categories viz. Liquid Bulk, Dry Bulk, Break Bulk and Container. Liquid Bulk comprises Petroleum Oil Lubricant (POL). Dry Bulk includes fertilisers, coal, foodgrains and other such cargo which is not amenable to containerisation. Break Bulk is the heterogeneous cargo mix which would progressively get containerised. The cargo handled by the major ports during 1996-97 to 2000-01 is given below:

(in million tonne)

Year	Liquid Bulk	Dry Bulk	Break Bulk	Container	Total
1996-1997	94.77	81.89	19.24	19.62	215.52
1997-1998	100.46	96.34	20.29	22.24	239.33
1998-1999	104.49	90.60	21.17	22.81	239.07
1999-2000	115.89	93.40	23.39	22.32	255.00
2000-2001	107.28	107.91	21.86	22.47	259.52
Total	522.89	470.14	105.95	109.46	1208.44

The table shows that against the estimated 390 million tonne, the major ports handled 259.52 million tonne cargo. The overall traffic increased by 20.41 per cent in 2000-01 as compared to 1996-97. Liquid Bulk constituted 43.29 per cent, Dry Bulk 38.89 per cent, Break Bulk 8.77 per cent of the total cargo handled. Although containerisation brought about a technological revolution in the transportation world on account of benefits such as door to door delivery, speedy inter modal transfers, low handling costs, reduced breakage and pilferage, lower insurance costs etc. the container handling at major ports was only 9.06 per cent of the total cargo handled. Main container traffic handling ports are Mumbai Port Trust (MbPT), JNPT and ChPT. KPT neither has any dedicated berth earmarked for container handling nor any container handling equipment. POL traffic is mainly handled by HDC, MbPT, ChPT, KPT and VPT, Dry Bulk is handled by HDC, ChPT, PPT, TPT, VPT and MPT. MPT is almost a mono cargo port with iron-ore export comprising 80 per cent of total traffic which is handled mechanically by a Ore Handling Plant.

2.1.2 Scope of Audit

A review of 'Cargo handling and Storage Facilities' was conducted in respect of ten major ports viz. KoPT (Kolkata Dock System (KDS) and HDC), MbPT, JNPT, MPT, ChPT, TPT, VPT, KPT, PPT and NMPT covering the period from 1996-97 to 2000-01.

2.1.3 Organisational set up

The management of each port is vested in a BoT comprising not more than 17/19 members. The administration is looked after by a Chairman assisted by a Deputy Chairman. Each port has different administrative and operational departments. Cargo handling and storage facilities are managed mainly by Traffic Department. Cargo handling equipment are maintained and provided by the Mechanical Engineering Department.

2.1.4 Cargo handling

There are different ways of handling cargo. Cargo is handled by using the port as well as ship's equipment. POL is discharged through pipelines. Dry Bulk Cargo like fertilisers, coal, iron-ore are mainly handled by mechanical plants. Break Bulk cargo and container traffic are generally handled by ships own gear, port equipment and private equipment. However, in JNPT container handling is done exclusively by port equipment and in Bulk Terminal the trend in recent years is more towards ship's gear handling and port equipment are utilised less. In ChPT iron-ore is handled by a fully mechanised Ore Handling Plant.

2.1.4.1 Physical targets and achievements

The traffic projection for different commodities are made by the major ports on the basis of the traffic handled in the previous year, growth expected in the current year and demand/estimates from the users. The estimates are discussed with the Ministry in the meeting of the Standing Committee on Rationalised Distribution of Cargo (RDC) and in consultation with other user, Ministry's targets for different commodities for different ports were finalised on these basis.

The physical targets fixed by the Ministry and achievements made by the major ports during the period under review is given below :

Year	Targets fixed by Ministry	Cargo actually handled	Shortfall(-) /Excess(+)
	(in million tonne)		
1996-1997	206.42	215.52	(+) 9.10
1997-1998	224.50	239.33	(+) 14.83
1998-1999	246.07	239.07	(-) 7.02
1999-2000	247.52	255.00	(+) 7.48
2000-2001	278.10	259.52	(-) 18.58

18.58 million tonne cargo was less handled by the ports in 2000-01.

The above table shows that there was overall shortfall in achievements of targets during the years 1998-99 and 2000-01 mainly due to decrease in export of iron-ore, fertilisers, coking coal, thermal coal and import of POL.

2.1.4.2 Financial targets and achievements

The budgeted income of the major ports are computed on the basis of targeted traffic finalised during each year whereas the expenditure budget is prepared on the basis of feedback obtained from the cargo handling divisions for each year.

Following table indicates the financial targets and achievements of the major ports during the period 1996-97 to 2000-01.

(Rs in crore)

Year	Income			Expenditure		
	Target/ Budget	Actual	Excess(+) /Shortfall(-)	Target/ Budget	Actual	Excess(+) /Shortfall(-)
1996-1997	1550.60	1611.76	(+) 61.16	522.41	528.53	(+) 6.12
1997-1998	1862.12	1770.23	(-) 91.89	584.19	594.72	(+) 10.53
1998-1999	1876.31	1816.47	(-) 59.84	667.31	650.56	(-) 16.75
1999-2000	1860.70	1760.31	(-) 100.39	729.53	687.91	(-) 41.62
2000-2001	1875.74	1772.12	(-) 103.62	790.47	804.19	(+) 13.72

Shortfall in income which was Rs 59.84 crore in the end of 1999 rose to 103.62 crore by end of March 2001.

The table shows that though the expenditure increased by 52.16 per cent between 1996-2001, the income increased by 9.95 per cent only.

There was shortfall in actual income over budgeted income for 1997-98, 1998-99, 1999-2000 and 2000-01 and excess of actual expenditure over budgeted expenditure for 1996-97, 1997-98 and 2000-01.

2.1.5 Cargo handling capacity and utilisation

The capacity of a port is the aggregate capacity of individual berths and depends on the type of commodity handled and equipment installed at the berth. Berth capacity is determined by the berth's size and length and the size of the vessel it can handle. This capacity has to be continually reassessed. The overall capacity requirement at the ports has been estimated by the Expert Group as 325 million tonne in 2000-01 and 540 million tonne in 2005-06.

The total existing cargo handling capacity *vis-a-vis* utilisation during the period 1996-2001 was as follows :

Year	Capacity	Cargo actually handled	Percentage of utilisation
	(in million tonne)		
1996-1997	208.07	215.52	103.58
1997-1998	226.37	239.33	105.73
1998-1999	234.27	239.07	102.05
1999-2000	251.06	255.00	101.57
2000-2001	271.51	259.52	95.58

The table shows that against an estimated 325 million tonne required the overall existing capacity of the ports was assessed at 271.51 million tonne in 2000-01, while it may be seen that the percentage of utilisation of existing capacity showed a decreasing trend and came down from 103.58 *per cent* in 1996-97 to 95.58 *per cent* in 2000-01. This was not account of any operational efficiency but due to decreased traffic, even as brought in subsequent (paragraph), the birth occupancy in most of the ports was very high compared to the norms. Reasonably the capacity utilisation normally should be anywhere near the norms laid by the Expert Committee viz. 65 *per cent*.

It was found during audit that:

- (i) HDC constructed a third Oil Jetty with a capacity of six million tonne in September 1999 at a cost of Rs 42.30 crore anticipating POL traffic of 12.3 and 11.8 million tonne in 1999-2000 and 2001-02 respectively considering that the existing POL handling capacity was 12 million tonne. But it was noticed that HDC handled only 10.80 and 10.60 million tonne of POL traffic in 1999-2000 and 2000-01 respectively, which could have been done with the existing facilities itself.
- (ii) In KPT there is no dedicated berth for specific cargo and no separate capacity has been fixed for Dry Bulk, Break Bulk and Containers.
- (iii) In PPT no berth wise capacity was assessed.
- (iv) In MbPT the capacity of the port has been re-assessed and reduced from 30.80 million tonne to 30.50 million tonne in 1998-99. In 1999-2000 the percentage of utilisation was even below the reduced capacity due to decline in POL traffic.

2.1.5.1 Physical indicators

The port efficiency is determined by average berth occupancy, average ship turn around time and average output per ship berth day. Normally, berth occupancy higher than 65 *per cent* is considered to be saturated. Longer average ship turn around time means longer detention of the ships in the port adding to the costs.

The physical performance indicators of major ports during 1996-97 and 2000-01 are as under :

Year	No. of ships handled	Average stay at berth	Overall berth occupancy	Average turn around time	Average output per ship berth day
	(No.)	(in days)	(in per cent)	(in days)	(in tonne)
1996-1997	12292	3.72	73.10	6.30	6599.57
1997-1998	13160	3.59	74.05	5.64	7158.66
1998-1999	13547	3.30	72.62	5.11	8053.73
1999-2000	14069	3.03	70.56	4.73	8897.08
2000-2001	13954	2.75	67.56	4.00	10528.19
Average	13404.40	3.28	71.58	5.16	8247.45

Ship turn around time reduced due to private participation.

The table shows that improvement in turnaround time since the average ship turn around time decreased from 6.30 days in 1996-97 to 4.00 days in 2000-01. Private participation was the major reason for decrease in ship turnaround time as discussed at Para 2.1.5.2.1.

In MPT it was the lowest, ranging between 2.85 and 3.60 days. The average turn around time was highest in KPT during 1996-97, 1997-98 and 1998-99 ranging between 7.81 and 10.62 days and at KDS during 1999-2000 being 6.59 days and 2000-01 at 5.50 days.

In TPT the berth occupancy was highest.

The average berth occupancy ranged from 67.56 to 74.05 *per cent* during the years 1996-2001 which can be considered as saturated judging by the norm of 65 *per cent*. If ships are not to be made to wait for berths, the ports in general do not have scope for handling higher volume of cargo until the port facilities are augmented. However, in KDS overall berth occupancy ranged only between 41.10 and 57.81 *per cent*. The berth occupancy was highest in TPT during 1997-2001 ranging between 90 and 95 *per cent*. In KPT as handling capacities were augmented from June 1997, March 2000 and June 2000, the overall berth occupancy came down from 95 *per cent* during 1997-98 to 79 *per cent* during 2000-01.

In TPT the average output per ship berth day as compared to 1996-97 was on the declining trend till 1999-2000.

In MbPT the number of ships handled by the port came down by 26.57 *per cent* from 1996-97 to 2000-2001. Overall berth occupancy therefore decreased from 74.82 *per cent* to 54.19 *per cent* during the period from 1996-97 to 1999-2000.

2.1.5.2 Financial indicators

The financial performance indicators of cargo handling and storage facilities of major ports during 1996-97 and 2000-01 were as under :

Year	Average cost per tonne of cargo handled (Rs)	Average income per tonne of cargo handled * (Rs)	Percentage of cost to income	Rate of return on net asset value (per cent)
1996-1997	34.93	88.98	43.98	39.82
1997-1998	34.89	90.49	41.28	45.60
1998-1999	33.79	85.89	44.82	37.67
1999-2000	38.48	82.26	49.10	35.51
2000-2001	42.66	87.09	49.71	30.37
Average	36.95	86.94	45.78	37.79

* Average cost and income per tonne was arrived by dividing the total cargo and storage expenditure and total cargo handling and storage income of the port by the quantity in tonne of cargo handled and average cost does not include capital expenditure.

It can be seen that the average cost per tonne of cargo handled increased from Rs 33.79 in 1998-99 to Rs 42.66 in 2000-01.

The rate of return on net value of total port assets declined to 30.37 per cent in 2000-01 from 45.60 per cent in 1997-98. However, in TPT the rate of return on net value of total port assets steadily increased in the first two years as compared to 1996-97 but showed a declining trend in the subsequent two years except for the slight increase in 2000-01 as compared to 1999-2000.

Percentage of cost of cargo to income was the highest in MPT and KPT.

The overall percentage of cost to income varied between 41.28 and 49.71 whereas in MPT and KPT the same was much higher ranging between 66.62 and 104.95.

2.1.5.2.1 Private sector participation

The MPT Act, 1963 provides for private sector participation with permissions to be accorded in each case by the BoT. With the objectives of improvement in efficiency, revenue generation and augmentation of financial viability, the Ministry issued guidelines (in 1992, 1993 and 1995) for leasing of existing berths in different ports for management by the private sector. Scrutiny revealed that out of 10 major ports, there has been some limited progress in this regard was achieved only in respect of five ports viz. KoPT, PPT, ChPT, KPT and TPT.

Detailed scrutiny of management of berths by the private sector *vis-a-vis* management by these five Port Trusts showed improved performance by the former with encouraging results. In HDC the percentage of utilisation of leased out berths ranged between 75 and 101 per cent whereas the utilisation

Berth occupancy of private sector was better than those managed by ports.

of other berths was only between 66.96 and 85.41 *per cent*. In case of PPT during 1997-2001 the capacity utilisation of leased out berths ranged from 133 *per cent* to 168 *per cent* while in case of other berths the utilisation varied between 102 and 145 *per cent*. In case of KPT, in the years 1998-99 to 2000-01 the utilisation of Dry Bulk Cargo in respect of leased out berths was 169 to 216 *per cent* whereas the utilisation of other berths for the same cargo was only between 114 and 125 *per cent*.

Private participation held in augmentation of capacity utilisation and revenue generation.

Thus, private participation did show augmentation of capacity utilisation and revenue generation and there was scope for further involvement of private parties. The ports were not found to be handling leasing contracts with due diligence. And as a result of this amount of Rs 65.38 crore was lost out or foregone by various ports.

Due to deficient leasing out contracts four ports have foregone revenue of Rs 65.38 crore.

- (i) HDC leased out a berth to TISCO on a minimum guaranteed cargo throughput of only 0.55 million tonne. However, judging by the prevailing performance and capacity of the berth TISCO could have handled 1.5 million tonne annually. Recovered on this basis during 1996-2001 there was a shortfall of 2.93 million tonne actually handled by TISCO for which HDC suffered a loss of Rs 19.05 crore.

However, while leasing out a berth to SAIL, HDC fixed the minimum guaranteed cargo at 1.5 million tonne. But due to non-execution of formal agreement and shortcomings in the Memorandum of Understanding an amount of Rs 41.82 crore was lying unrealised and the case has gone under arbitration.

- (ii) In case of a berth leased out to OCFL, due to not defining the term 'annum' as the 'financial year' in the Agreement for calculation of guaranteed traffic PPT suffered loss of revenue of Rs 1.16 crore apart from wharfage for Rs 2.20 crore remaining unrealised.
- (iii) In ChPT failure to implement the Government directive issued in 1995 for increasing the berth reservation charges in two leased berths resulted in non-collection of dues to the tune of Rs 76.40 lakh for the first year of lease. For the second year, the Port Trust collected the enhanced charges by adjusting against pending advances of the lessees; but for the third year of lease, for want of sufficient advance, Rs 38.46 lakh remained to be adjusted/collected.

As private sector participation in management of existing berths is inadequate for augmentation of capacity the Ministry issued guidelines in October 1998 for private sector participation in construction of additional assets. Accordingly, private sector participation in augmentation of port capacity is underway in JNPT, MbPT, MPT, ChPT and HDC of KoPT.

A detailed analysis revealed the following:

- (i) JNPT entered into a 30 year lease and licence agreement on BOT basis with NSICT in July 1997. The agreement stipulated that the payment of royalty would commence from the date of commercial operation. Schedule of payment in the agreement, payment was to commence from the third year of the award of the contract.

It was found in audit that there was no doubt an inconsistency in the agreement where by commencement as per the schedule of payment was mentioned as "from third year of the award of the contract" while the main clauses of agreement required payment from the date of commercial operation; nevertheless, JNPT should have asserted the main clause of agreement. More so, because definitions at article of agreement clarified the date of commercial operation meant the earlier of the two occurrences.

Scrutiny of records revealed that although the firm commenced commercial operations from April 1999, they made payment of royalty from July 1999 i.e. from the third year of entering into the agreement. Thus, due to failure to assert substantive part of the contract, JNPT suffered a loss of Rs 19.20 lakh being royalty for three months. In addition the port would suffer a loss of Rs 80.74 crore for the next 28 years. JNPT should invoke main clause of agreement as the schedule of payment is only supplementary and the definitions make matters amply clear.

NSICT also agreed to construct a two lane causeway connecting the mainland to the extremity of the southern wharf extension to augment the capacity of the existing causeways to handle container traffic. In contravention of the agreement the firm constructed only part of the causeway from the southern end of the berth leaving the mainland unconnected. In April 1999 the port completed the same by incurring additional expenditure of Rs 64.24 lakh. The amount was not recovered from NSICT. The terms of contract were deficient and port admitted the lapse.

- (ii) KPT could not finalise tenders invited in May 1992 for development of Container Terminal at Kandla on private participation. The delay deprived the port of the container handling facilities as well as additional revenue.
- (iii) In VPT, a multipurpose berth scheduled to be completed in January 1999 was completed only in July 2000 after a delay of one and half year at a total cost of Rs 37.02 crore. The berth meant for handling container cargo is at present being utilised for trans-shipment cargo

Lack of synchronisation of various facilities.

pending creation of container handling facilities at the berth through private participation on BOT basis.

- (iv) A plan scheme for reconstruction of ore tippler 2 for handling additional coal traffic was included in the 8th five year plan. HDC failed to prepare the bid document correctly and discharged the initial tender in July 1998 on the ground that for a high value item tender was insisted on the basis of brand name and not on the basis of detailed specification. This resulted in time-over-run of three years and cost-over-run of Rs 2.62 crore.

2.1.5.3 Heavy plant and machinery

The heavy plant and machinery installed at the major ports except NMPT is given below :

(Rs in crore)

As on 1 st April	Dock Quays and Jetties	Heavy plant and machinery pertaining to cargo handling	Total assets
1996	544.91	393.50	3568.26
1997	634.60	400.51	3793.66
1998	671.57	428.33	4334.88
1999	713.18	442.39	4790.09
2000	779.99	457.26	5755.08
Per cent increase (1996-2000)	43.14	16.20	61.29

The above table shows that though there was an overall increase of 16.20 *per cent* in mechanisation in the year 2000 as compared to the year 1996, a detailed analysis revealed that there was wide variation in mechanisation at different ports as indicated below :

- (a) KDS, KPT and PPT showed a trend towards mechanisation with 127.22, 474.53 and 39.78 *per cent* increase respectively.
- (b) In HDC, JNPT and VPT there was marginal increase in mechanisation. The percentage increase being 1.19, 9.70 and 11.60 respectively. These ports may be already heavily mechanised.
- (c) MPT, ChPT and TPT showed a negative trend towards mechanisation with 14.22, 3.76 and 31.94 *per cent* decrease respectively.

Negative trend in mechanisation at MPT, ChPT and TPT.

Under utilisation of ore handling plant in VPT and PPT.

It was further noticed that during the period 1996-2001 export of iron-ore and coal declined at VPT and PPT. But VPT without foresight went in for installing an ore handling plant in January 1999 at a cost of

Rs 110.44 crore. As a result, there was under utilisation of ore-handling plant and percentage of shortfall against anticipated throughput ranged between 6.70 *per cent* and 39.80 *per cent* over the years. In PPT the utilisation of iron-ore and coal handling plant was only between 41.92 *per cent* and 57.20 *per cent*.

2.1.5.4 Equipment facilities

2.1.5.4.1 Availability and utilisation of cargo handling equipment

The utilisation of cargo handling equipment during 1996-97 and 2000-01 in respect of 10 major ports was as follows:

(hours in thousand)

Year	Total no. of hours available (Gross)	Available working hours (Net)	Actual working hours	Percentage availability	Percentage utilisation
(1)	(2)	(3)	(4)	(5) (3/2x100)	(6) (4/2x100)
1996-1997	6807.73	4621.72	1578.04	67.89	23.18
1997-1998	7129.09	4828.60	1849.28	67.73	25.94
1998-1999	7214.87	5154.58	1899.65	71.44	26.33
1999-2000	6692.59	4698.71	1728.88	70.21	25.83
2000-2001	6880.86	5245.37	1799.12	76.23	26.15
Total	34725.14	24548.98	8854.97	70.70	25.50

Ports equipment were not fully utilized.

The above table reveals the following :

The percentage utilisation with respect to total hours available was very low in all the five years ranging between 23.18 *per cent* and 26.33 *per cent*. The NMPT, PPT and TPT contributed the lowest with 2.31 to 7.74 *per cent*, 7.10 to 11.24 *per cent*, and 11.83 to 15.32 *per cent* respectively. In MbPT the percentage utilisation came down from 22.94 *per cent* in 1996-97 to 17.92 *per cent* in 2000-2001.

It was further noticed that :

- (a) No guidelines or norms were available with any of the ports for maintaining fleet strength *vis-a-vis* demand.
- (b) The average fleet strength was much more than the average traffic demand during all the years under review in respect of HDC, MPT, ChPT, KPT and NMPT.
- (c) In spite of having an equipment fleet strength much in excess of actual demand, HDC could not supply payloaders, fork lift trucks and hippo tractors against demand in 95, 70 and 122 nos. of cases respectively resulting in loss of Rs 3.63 lakh apart from low rate of discharge of ships. KPT could not supply equipment against demand on 197

Due to non supply of equipment, HDC and MbPT suffered a loss of Rs 51.76 crore.

occasions. Further due to non supply of equipment for break down/repair and maintenance MbPT suffered loss of revenue of Rs 51.72 crore.

- (d) In KPT percentage utilisation of mobile equipment was below the norms except during the year 1999-2000 due to lack of demand on account of equipment being old and outlived.
- (e) In JNPT scrutiny of log books and monthly/daily reports of various cargo handling equipment revealed that the actual utilisation was around 42 *per cent* in 1996-97 which came down to 28.14 *per cent* in 1999-2000. It was also observed that the average utilisation of bulk cargo handling equipment showed a negative trend since 1997-98.

Failure of JNPT to optimally utilize own equipment led to an avoidable expenditure of Rs 26.70 crore on hiring of yard cranes.

- (f) The utilisation of JNPT's own yard cranes varied between six and 45 *per cent* of net hours available out of which four yard cranes were utilised only between six and 20 *per cent* against Ministry's norms of utilisation are 40 *per cent*. Despite this, JNPT hired six yard cranes whose average utilisation was 69.74 *per cent*. Failure of the port to optimally utilise its own equipment led to an avoidable expenditure of Rs 26.70 crore on hiring of yard cranes from 1997-98 to 2000-01.

- (g) In JNPT an expenditure of Rs 49.50 lakh was incurred on a scheme to augment the cargo handling capacity of Grab unloaded in Bulk Terminal which remained unfruitful as the system could not be utilised.

- (h) PPT paid a sum of Rs 11.44 lakh towards hire charges of pay loader during the period 1996-99 although all the four of pay loaders owned by PPT were in working condition and the percentage availability was between 60.57 and 90.38 *per cent* during the same period.

Unnecessary procurement.

- (i) In ChPT the percentage of utilisation in respect of wharf crane and fork lift truck was lower than the norm. Moreover, hasty action taken by ChPT on procurement of three wharf cranes resulted in blocking of Rs 30.55 crore with one crane remaining idle after taking over and two cranes remained to be formally handed over.

- (j) TPT possessed four Top Lift trucks of 35 tonne capacity and one of 25 tonne capacity, the utilisation of which during the years 1996-97 and 1997-98 was only between 23.05 *per cent* and 26.06 *per cent* as against Ministry's norms of 35 *per cent*. TPT further commissioned another 35 tonne capacity Top Lift truck in July 1998 at a cost of Rs 189.10 lakh resulting in an avoidable expenditure.

2.1.5.4.2 Maintenance of cargo handling equipment

It was also noticed that in some of the ports there has been inordinate delay in getting the ports equipment repaired/condemned.

A detailed scrutiny revealed the following:

Delays in repairs and unfruitful repairs.

- (i) There was delay in repair of equipment at HDC in 78 cases ranging between one month and five years five months. At HDC obsolete spare parts worth Rs 21.11 lakh have been lying in the Plant and Equipment division for more than four years. At VPT there were 15 items of equipment having book value of Rs 102.43 lakh which were either unserviceable or surplus awaiting disposal. At PPT two nos of equipment having book value of Rs 45.71 lakh was lying unserviceable since October 1998 awaiting disposal.
- (ii) At TPT maintenance of outlived equipment resulted in loss of Rs 10.98 crore.

2.1.5.5 Storage facilities

(i) Storage space

Sample check of utilisation of storage space by the Ports revealed the following:

Only 29.14 per cent of storage space under the Ports possession could be utilised.

- (a) The Major Ports under review except KDS of KoPT, MbPT and KPT had the total storage space of 1046.52 hectare as on 31 March 2001, out of which 622.82 hectare has been kept under the Port's own possession. The Ports could utilise only 181.52 hectare being 29.14 per cent of storage space kept under their possession.

While the space was fully utilised in HDC, in MPT and VPT, the space remained fully unutilised. In KPT the storage capacity has not been assessed. In JNPT the average percentage utilisation for last three years was only 18.05 per cent.

- (b) In PPT three out of five warehouses measuring 3199 square metre remained completely idle during 1998-2001. These warehouses were expected to fetch revenue of Rs 3.20 lakh per month on the basis of their storage capacity. In June 2001 PPT decided to demolish two warehouses.
- (c) In MbPT cargo worth Rs 2.61 core were stolen during the period 1996-2001 out of which only goods worth Rs 94.28 lakh was recovered.
- (d) ChPT allotted an open space to a firm in April 1997 measuring 13750 sq. mts. laid up with Pre Cast Concrete Blocks over the Water Bound

Macadam at a cost of Rs 1900 per hundred sq. mts. per month as applicable for Water Bound Macadam only in violation of Ministry's guidelines of April 1995. Due to non-fixation of proportionately higher rate taking into account the return on capital invested there was non-realisation of Rs 27.50 lakh till March 2001.

Less collection of licence fee amounting to Rs 1.93 crore.

- (e) ChPT failed to recover licence fee on railway track lengths used by a firm as per provisions of Scale of Rates resulting in non-collection of licence fee amounting to Rs 1.93 crore for the period from August 1994 to October 2001.
- (f) In VPT the space under lease/licence has been on the decline from year to year and the space under ports own possession has not been utilised at all, the VPT added additional storage space in 1998-99 and 1999-2000.

(ii) Storage income

Apart from normal storage charges, demurrage charges are levied on the port users for using storage space beyond permissible free time.

The details of storage income *vis-a-vis* the total income of major ports except KDS of KoPT are as shown below :

(Rs in crore)

Year	Storage income	Total income	Storage as percentage to total income
1996-1997	367.96	1798.90	20.46
1997-1998	320.96	1978.17	16.23
1998-1999	286.04	2037.48	14.04
1999-2000	232.31	2053.53	11.31
2000-2001	179.73	2094.35	08.58

The above table shows that the storage income was low and fell from 20.46 *per cent* in 1996-97 to 8.58 *per cent* in 2000-01. The percentage was the lowest in HDC, MPT and VPT varying between 0.62 and 3.94 *per cent*.

High proportion of demurrage charges in storage income.

Detailed scrutiny revealed that in HDC portion of demurrage income to total storage income showed a steady rise. Space was occupied as transit by paying demurrage as HDC did not allot the oil company storage space asked by it.

Thus, substantial amounts of revenue earned on account of storage income by ports are on account of demurrage on cargo stored for a long time on port premises. This is nothing but a rent earned by the inefficiencies of whole logistics of port system and not due to any economic management.

It was also found that :

ChPT failed to collect Premium and Security Deposit worth Rs 10.92 crore.

(i) In JNPT the storage income was Rs 49.71 crore in 1996-97 which came down to Rs 12.45 crore in 2000-01, a decline by 74.95 per cent.

(ii) ChPT did not collect Premium and Security Deposit of Rs 3.64 crore in respect of open space/shed leased out/renewed to nine agencies during the period from April 1995 to March 2000 as per the stipulations in Ministry's guidelines. The premium and security deposit enhanced from April 2000 for leases renewed thereafter, amounting to Rs 7.28 crore were also not collected. Loss of interest on premium and security deposit not collected upto March 2000 alone worked out to Rs 1.46 crore.

KPT failed to recover demurrage dues amounting to Rs 4.10 crore.

(iii) KPT allowed three parties to remove cargo without payment of dues against the provisions of Major Port Trusts Act, 1963 resulting in non-recovery of demurrage dues to the extent of Rs 410.12 lakh.

2.1.6 Billing and realisation

The position of billing and realisation during the years 1996-97 to 2000-01 in respect of major ports is given in the table below:

<i>(Rs in crore)</i>			
Year	Amount billed	Amount realised	Amount outstanding
1996-1997	655.33	635.59	19.74
1997-1998	748.18	733.09	15.09
1998-1999	1013.53	994.12	19.41
1999-2000	968.26	945.55	22.71
2000-2001	920.96	895.65	25.31

Note : Figures in respect of KDS, ChPT, PPT and JNPT (1996-1998) have not been available.

Port failed to realise outstanding bills amounting to Rs 25.31 crore for service rendered.

The above table reveals that amounts ranging between Rs 15.09 crore and Rs 25.31 crore were outstanding at the end of the year from 1996-97 to 2000-01 in respect of bills pertaining to the particular years out of which NMPT contributed the highest with Rs 10.39 crore at the end of 2000-01 and PPT did not have any outstanding dues as the services were provided on pre-deposit basis.

In VPT iron-ore handling charges for Rs 4.02 crore remained outstanding for long from MMTC. Further an amount of Rs 2.08 crore being wharfage charges for the period 1995-2000 remained un-realised from Tinna Oils and Chemicals.

Delayed proposals for revision of scale of rates.

2.1.7 Scale of rates

Rates for various services in the ports are implemented with the approval of the Tariff Authority for Major Ports. As per Ministry's instructions the revision of port 'Scale of rates' (Tariff Structure) needs to be made in every three years taking into account the escalations for the next three years.

A scrutiny of records revealed that :

- (i) At HDC no cost schedule of different commodities was prepared taking into account the elements/operations including cost of labour and equipment involved in cargo handling. In the absence of the cost schedule, it could not be ascertained whether the rates fixed in the scale of rates meet the entire cost of handling of cargo and are profitable to the port. The scale of rates was revised in the year 2001 after a gap of five years.
- (ii) In PPT the scale of rates was revised in the year 2000 after a gap of seven years and no cost schedule of different commodities was prepared taking into account the elements/operations including cost of labour and equipment involved in cargo handling. In the absence of the cost schedule, it could not be ascertained whether the rates fixed in the scale of rates meet the entire cost of handling of cargo and are profitable to the port.
- (iii) TPT failed to effect appropriate revision in respect of copper concentrate resulting in loss of revenue of Rs 40.27 lakh during April 2000 to March 2001.
- (iv) At KPT the scale of rates provide 50 *per cent* rebate in wharfage charges for export cargo as a result the cost incurred for handling of rice, soya, salt etc. could not be recovered. The wharfage rates fixed for commodities such as wooden logs, Polyvinyl Chloride/ High Density Poly Ethelene was not commensurate with the cost. The extent of subsidy on the commodities handled during 1996-97 to 1999-2000 worked out to Rs 14.69 crore.

Delay in proposing revision of rates led to loss of revenue of Rs 40.27 lakh by TPT.

2.1.8 Other points

- (i) PPT undertook the upgradation of the Iron-ore handling plant to enhance the existing rated capacity of 2500 MT to 3200 MT per hour to handle five Million Metric Tonne per year. The investment of Rs 18.73 crore towards upgradation of Iron-ore handling plant to enhance its rated capacity was not justified as the traffic projection is to handle one million tonne iron-ore per year from 2000-01 to 2011-12.

KPT suffered a loss of Rs 7.10 crore due to its failure to fix rates.

- (ii) Due to inaction of KPT to fix the rates and to collect deposit from IOC for the year 1998-99 immediately has resulted in loss of revenue of Rs 7.10 crore.
- (ii) In May 1997 MbPT installed a VTMS at a cost of Rs 27.76 crore with the objective of providing greater efficiency of ship management and increase to cater to greater number of ships. The financial benefit accruing to the port was projected to be Rs 8.63 crore *per annum*. Scrutiny revealed that no additional traffic could be attracted by installation of VTMS thus rendering the investment unfruitful.

2.1.9 Audit conclusion

The major ports of India (10 ports) handled only 259.52 million tonne of cargo against the estimated target of 390 million tonne. The key areas of weakness of port operations can be identified as :

- Inefficient and non-optimal deployment of port equipment.
- Poor utilisation of port equipment due to maintenance of the same much in excess of average demand.
- Although it is believed that mechanisation of dry bulk cargo normally leads to more cost efficient cargo handling, overall trend of mechanisation was not encouraging.
- The port operations were not cost efficient as the average cost per tonne of cargo handled depicted increasing trend and the rate of return on net value on total port assets declined sharply in 2000-01 as compared to 1996-97.

The overall capacity estimated by the expert group as 325 million tonne in 2000-01 whereas the assessed capacity of the Major Ports in 2000-2001 was only 271.51 million tonne (10 ports). The average ship turn around time decreased from 6.30 days in 1996-97 to 4.00 days in 2000-01. The average berth occupancy was above the saturation level at major ports leaving no scope for handling higher volume of cargo until the port facilities are augmented. Augmentation of port capacity is therefore, of utmost importance to boost the efficiency of ports. The Ministry issued several guidelines from time to time for augmentation of port capacity by private participation within the ambit of Major Port Trusts Act, 1963. This has two aspects-leasing out of existing berths to private parties for more efficient operation and construction of additional berths by private participation. While there has been only some limited progress in respect of leasing out of existing berths, private sector participation in construction of additional berths is still underway in some of the ports.

The matter was referred to the Ministry in December 2001; their reply was awaited as of January 2002.

2.2 Dredging operations at Kolkata Port Trust

The review on dredging operations revealed that these operations were being carried out without comprehensive planning. Major components of a comprehensive scheme involving capital dredging, river training works and maintenance dredging approved in 1982 were not implemented. Instead, ad-hoc targets from year to year for maintenance dredging alone were fixed. These ad-hoc targets failed to improve the navigation channels. Despite heavy recurring expenditure incurred on maintenance dredging by Kolkata Port Trust shipping channels leading to Kolkata Dock System and Haldia Dock Complex could not be made navigable for bigger ships thereby adversely affecting the revenue earning of the Port.

Kolkata Port Trust's own dredgers as well as hired dredgers performed poorly. Flawed contracts, poorly supervised operations and sheer negligence, caused large excess payments amounting to Rs 113.02 crore as revealed in test check. Instead of shore disposal, dredged material continued to be dumped in the river with consequent recycling.

Claims for dredging subsidy made by Kolkata Port Trust from the Ministry of Shipping were inflated, and certain items of expenditure unauthorised by the Ministry were claimed. In summary, the dredging operations seemed to have been carried out aimlessly without much advantage.

Highlights

- **Instead of implementing a comprehensive scheme which envisaged capital dredging and river training works, reliance was placed solely on maintenance dredging with ad-hoc targets.**
- **There was a shortfall of 19.28 million cubic metre (m.cu.m) of dredging against the ad-hoc targets during 1996-2001 and targeted minimum depth was not achieved despite an expenditure of Rs 1290.95 crore.**
- **The performance of KoPT's own dredgers was poor and the cost of deploying them was very high.**
- **Contracts for dredging by DCI based on time hire rates did not provide in the agreements for safeguards against non-performance occasioned by bottom door leakage of hoppers, residual quantum of dredged material remaining in hopper after disposal and slow speed of dredgers.**
- **In January 1998 a contract for payments based on actual quantity dredged was signed with HAM Dredging and Marine Contractors (HAM) despite the caution sounded by Dredging Corporation of India (DCI), at the instance of Ministry of Shipping, regarding**

ambiguities about depth guarantee and its relation to payments based only on quantity dredged as provided for in the contract . There was no specific stipulation of a guarantee of depth to be achieved and maintained by the contractor as claimed by the Chairman , Kolkata Port Trust (KoPT) in his letter seeking approval to the contract from the Ministry.

- Since the objective of the contract with HAM was to increase depth by 1.5 metre, the incorporation of a clause for depth tolerance of 0.5 metre in the contract was not consistent. Ultimately, the deficient contract with HAM led to non-achievement of required depth despite expenditure of Rs 369.52 crore and a further liability of Rs 9.03 crore.
- Despite the experience gained in operating contracts based on actual quantity dredged with HAM, KoPT did not introduce any safeguards while awarding quantity based work to DCI since June 2000. No agreement was signed by KoPT with DCI though it was entrusted with the work of dredging. There was an excess payment of Rs 35.80 crore during June 2000 to March 2001 due to the bulk density of dredged material being below the effective bulk density of 1.55 gram per cubic centimetre (gm/cu.cm).
- During the execution of contract with HAM, KoPT certified and passed payment for 0.81 m.cu.m without adjustment for clay content which if adjusted amounted to only 0.38 m.cu.m of material actually dredged resulting in extra expenditure of Rs 7.43 crore ; out of 116 samples of dredged material test checked by experts, 64 samples checked in Audit had excess clay content . Besides , HAM was permitted to dredge 1.303 m.cu.m at Jellingham beyond the stipulations in the contract resulting in extra contractual payment of Rs 22.38 crore.
- The quantum of dredging required to attain the depth stipulated in the contract with HAM depended on average bulk density of dredged material to be 1.79 gms/cu.cm which was not provided for specifically in the contract. This resulted in avoidable payment of Rs 21.39 crore for material with average bulk density of 1.63 gm/cu.cm and again avoidable payment of Rs 68.24 crore for material with bulk density below 1.55 gm/cu.cm.
- Expenditure on dredging activities by KoPT is reimbursed by Ministry annually after verification of claims directly related to dredging by audit. Of Rs 1290.95 crore claimed by KoPT during 1996-2001 an amount of Rs 206.64 crore were not admitted by audit as reimbursable by Ministry since it was found that expenditure on idle dredgers, payments to contracting parties

based on erroneous calculation of dredged material and expenditure not authorised by Ministry were wrongly included in claims by KoPT.

- **KoPT's continued practice of free dumping of dredged spoils within the river and failure to set up shore disposal terminal led to increased recirculation of dredged material rendering an expenditure of Rs 206.25 crore on dredging ineffective.**
- **Failure to utilise the survey vessels and launches led to idle expenditure of Rs 7.60 crore in 1996-2001.**

2.2.1. Introduction

Kolkata Port Trust (KoPT), maintains a riverine port which consists of two dock systems i.e. Kolkata Dock System (KDS) and Haldia Dock Complex (HDC). The two dock systems share a common shipping channel from Sandheads to Saugor. The channel bifurcates at this point, one leading to HDC via Auckland & Jellingham and the other leading to KDS via Maragolia crossing, Bedford, Nayachara channel and several other bars. There are 12 bars in the navigational channel between KDS and HDC (upstream of Auckland Bar) and four estuarine bars in the shipping channel leading to HDC. In order to facilitate shipping, the bars and other locations in the shipping channels are dredged throughout the year to maintain navigable depth. The Ministry reimburses the entire expenditure directly related to river dredging and river maintenance on the basis of claims submitted by KoPT after verification by Audit.

2.2.2 Scope of Audit

The dredging operations (both river dredging and port dredging) at KoPT was reviewed in audit between June and November 2001 to evaluate the port's performance regarding effective maintenance of navigable depth in the shipping channel and the docks and its cost effectiveness during the period 1996-2001.

2.2.3 Organisational set up

KoPT is under the administrative control of Ministry of Shipping. Its management is vested in a BoT with a Chairman appointed by Ministry as its administrative head. The Director, Marine Department is in charge of dredging operations in KoPT. The Hydraulic Study Department, headed by Chief Hydraulic Engineer (CHE) advises on technical matters for dredging activities and other river related works. The Superintendent, Dredger and Despatch Service carries out the actual dredging operations.

2.2.4 River dredging

KoPT carries out dredging in the shipping channels leading to HDC and KDS through dredging contractors and also through its own dredgers.

At HDC, the four estuarine bars in the navigational channel and other locations like Satish Samanta Oil Jetty (SSOJ) and Haldia Oil Jetty are dredged mainly by dredgers of the contractors like DCI and HAM. Dredging at these locations accounted for 85 *per cent* of the total dredging quantum and 82 *per cent* of the total dredging cost during 1996-2001. Of the total dredging done between 1996-2001 fifty *per cent* was accounted for by Jellingham Shoal section where dredging was done in all the five years. Five *per cent* of the dredging was done at Lower Jellingham Crossing in three years. The remaining 45 *per cent* of the total dredging was done at nineteen other locations.

2.2.4.1 Expenditure and Subsidy for river dredging

The expenditure on river dredging constituted a major share of the total operating expenditure of KoPT during the period 1996-2001. The Ministry reimburses hundred *per cent* of the costs directly related to river dredging, river maintenance as well as maintenance dredging of shipping channel leading to Haldia after verification of the claims of KoPT by audit. KoPT claimed every year the entire expenditure for reimbursement. However, the table below shows the yearwise details on river dredging expenditure and their reimbursement against the claims by KoPT after audit verification of claims.

(Rs in crore)

Year	Total expenditure on river dredging	Amount reimbursable	Amount not admitted by audit	Total operating cost of KoPT
1996-1997	107.38	102.87	4.51	328.29
1997-1998	166.75	164.49	2.26	411.92
1998-1999	379.48	376.08	3.40	662.22
1999-2000	305.44	194.35	111.09	618.51
2000-2001	331.90	246.52	85.38	689.40
Total	1290.95	1084.31	206.64	2710.34

The yearly expenditure on dredging ranged between Rs 107.38 crore and Rs 379.48 crore during 1996-2001 increasing more than three times over the period.

Inflated claims by KoPT for reimbursement of directly related costs of dredging.

Of the total amount of Rs 1290.95 crore claimed by KoPT towards river dredging expenditure for the period from 1996-2001 an amount of Rs 1084.31 crore was admitted in audit for reimbursement after deducting Rs 206.64 crore being the amount not directly related to dredging activity, since it was found that items such as expenditure on idle dredgers, payment to contracting parties

based on erroneous calculation of dredged material and expenditure not authorised by Ministry were wrongly included in the claims by KoPT.

Even after deduction, the subsidy by way of reimbursement constituted 26 per cent of the KoPT's income. As indicated in the table below, without dredging subsidy the deficit in KDS ranged between Rs 16.06 crore and Rs 159.15 crore during 1996-2001 and in HDC between Rs 76.44 crore and Rs 221.03 crore during 1998-2001. The position was, however, worse in KDS, where even with subsidy, there was a deficit of Rs 142.05 crore during 1996-2001.

(Rs in crore)

Year	Amount of subsidy		Surplus / Deficit		Surplus/Deficit without subsidy	
	KDS	HDC	KDS	HDC	KDS	HDC
1996-1997	30.25	72.62	14.19	129.07	(-)16.06	56.45
1997-1998	35.77	128.72	2.97	170.50	(-)32.80	41.78
1998-1999	42.22	333.86	(-)16.81	112.83	(-)59.03	(-)221.03
1999-2000	35.96	158.38	(-)38.30	81.94	(-)74.26	(-)76.44
2000-2001	55.05	191.47	(-) 104.10	96.57	(-)159.15	(-)94.90

2.2.4.2.1 *Non-execution of Comprehensive scheme and consequent compromised navigability*

Failure to evolve and implement a comprehensive policy on dredging operations necessitated fixing ad-hoc targets that hardly solved the problems.

The dredging rate for the navigation channel has to be greater than the siltation rate in order to achieve and maintain the required depth at different bars in the channel. This requires river regulatory measures, capital dredging at specific locations at periodical intervals when channels get completely blocked and continuous maintenance dredging of the riverine channel based on survey data.

Comprehensive scheme undertaken in 1981 but critical components deferred in 1990.

Studies were conducted as early as 1978 by a high level team called Gole Committee under the Chairmanship of Shri C V Gole, Member CWC. Based on these studies, KoPT formulated a comprehensive scheme for improving the draught in Hooghly estuary, in 1981 at an estimated cost of Rs 76.88 crore, which was revised in August 1982. While the scheme included 10 components for execution including, inter alia, construction of two guidewalls at the northern and southern ends of Nayachara island and capital dredging over Balari bar, only the northern guidewall was constructed and capital dredging over Balari bar was not taken up. This caused spatial expansion of the bar and the adjoining Jiggerkhali flat. Consequently common shipping channel for KDS and HDC had to be discontinued through Haldia-Balari region from February 1987 and a new shipping channel (Rangafalla channel) which was not very stable had to be opened up for navigation for KDS through Bedford channel by-passing Balari.

The Technical Advisory Committee (TAC) set up in 1982 for monitoring the comprehensive scheme, accorded (August 1987) priority to the recession of

the Jiggerkhali flat and decided to defer the capital dredging over Balari bar till the conditions in this area of the estuary were restored to the position obtaining prior to commencement of the guidewall.

During the course of construction of guidewall, certain morphological changes occurred in the estuary consequent upon which the scheme was further revised (June 1990) to Rs 42.38 crore on the basis of TAC's recommendations covering only three components viz. (i) construction of northern guidewall (ii) additional tug and navigational aids and (iii) instrumentation. The revised scheme was completed in June 1992 at a cost of Rs 43.71 crore. The recessional dredging at Jiggerkhali flat which was intended to act synchronously with the northern guidewall for effective flow propagation through Haldia – Jellingham channel could not be implemented due to non-performance by the contractor in April 1993. A mention of this case was made in paragraph 30 of Comptroller and Auditor General's Report No. 11 of 1994. Trial dredging at Jiggerkhali flat started in March 1991 was abandoned due to breakdown of disposal lines of contractor.

In short, the comprehensive scheme of 1981 as revised from time to time was poorly implemented in an ad-hoc manner and seriously affected the health of the navigational channel for HDC and conditions of the Hooghly estuary. Therefore, the Ministry approached the PIB again which met in February and April 2001 to consider another scheme of River Regulatory Measures for improvement of draught in Hooghly scheduled to be completed by September 2002, at an estimated cost of Rs 350.84 crore with the objectives of reduction of annual maintenance dredging by three m.cu.m increase of depth in the shipping channel for HDC by one metre and arresting the deteriorating trend in the river morphology.

Two items of the earlier comprehensive scheme sanctioned in August 1982 namely, southern guidewall and bank protection near Sondia column were also included in the new scheme.

PIB considered these schemes in their meetings in February and April, 2001 and took the following decisions:

- (i) The execution of River Regulatory Measures for the improvement of draught in Hooghly estuary of KoPT at an estimated cost of Rs 350.84 crore was recommended for approval of CCEA.
- (ii) The actual net incremental revenue from the measures should be calculated as per principles adopted by PAMD, Planning Commission in their appraisal notes of January and March 2001.
- (iii) Actual net incremental revenue should be shared in the ratio of 70:30 between Government of India and CPT and reduction of the annual non-plan grants to KoPT towards AMD by the equivalent amount of

70 per cent of the actual net incremental revenue from the project. This amount would not be less than Rs 40 crore.

- (iv) The annual grants to KoPT was to be restricted to the cost of dredging for 15 m.cu.m minus the amount calculated as per (iii) above.
- (v) Ministry of Shipping's proposal to initiate preparatory action towards floatation of tenders etc was agreed subject to the condition that work order would be placed only on obtaining clearance of the project by CCEA.

The scheme was approved by CCEA in November 2001.

2.2.4.2.2 Ad-hoc Targets

New scheme for river regulatory works approved as late as November 2001, meanwhile, 1996 to March 2001 ad-hoc targets for maintenance dredging pursued.

Meanwhile, in the absence of river training works, an ad-hoc quantity target of 22 m.cu.m was fixed and kept throughout the period of 1996 to 2001 for achieving a 'manageable stability' of the river regime leading to HDC as well as KDS.

The breakup of targets for maintenance dredging *vis-a-vis* achievement in the entire navigational channel from Sandheads in the Bay of Bengal to the docks were as follows :

(in million cubic metres)

Year	Target		Actual		Excess(+)/Shortfall(-)	
	KDS	HDC	KDS	HDC	KDS	HDC
(1)	(2)	(3)	(4)	(5)	(6) [2-4]	(7) [3-5]
1996-1997	4.00	18.00	3.81	7.13	(-)0.19	(-)10.87
1997-1998	4.00	18.00	3.20	9.10	(-)0.80	(-)8.90
1998-1999	4.00	18.00	3.83	21.38	(-)0.17	(+)3.38
1999-2000	4.00	18.00	0.98	20.01	(-)3.02	(+)2.01
2000-2001	3.50	18.50	1.62	19.66	(-)1.88	(+)1.16
Total	19.50	90.50	13.44	77.28	(-) 6.06	(-) 13.22

It may be seen that the annual targets are the same throughout the period (except in 2000-2001) and evidently have no relationship to the differential between rates of siltation and dredging. These were ad-hoc targets resorted to as a result of non-implementation of the entire comprehensive scheme and, as seen from our comments above were inadequate to maintain the required depth for navigation. Even these ad-hoc targets were not fulfilled.

Shortfalls even against ad-hoc targets due to poor performance of KoPT's own dredgers and lack of safeguards in contracts for hired dredgers.

During 1996-2001 against the total ad-hoc targeted dredging of 19.50 m.cu.m in KDS, only 13.44 m.cu.m was achieved and against 90.50 m.cu.m targeted dredging in HDC, only 77.28 m.cu.m was achieved. Total dredging shortfall *vis-a-vis* these ad-hoc targets during the period was 19.28 m.cu.m i.e. about 18 per cent of the targeted quantum. Thus, even the shortfalls in annual

achievement against ad-hoc targets were not considered while fixing targets for subsequent years. These shortfalls were on account of poor performance of KoPT 's own dredgers, poor supervision of the operation of contracts with DCI, execution of faulty contracts without providing proper safeguards against poor performance and ineffective disposal of dredged material. These failures have been amplified in subsequent paras.

The non-achievement of targeted depths may be appreciated from the table given below.

(in metres)

Year	Targeted average minimum navigable depth		Average minimum navigable depth achieved		Excess(+)/ Shortfall(-)	
	KDS	HDC	KDS	HDC	KDS	HDC
1996-1997	3.00	6.4	2.2	4.5	(-) 0.8	(-) 1.9
1997-1998	3.00	6.4	1.1	4.6	(-)1.9	(-)1.8
1998-1999	3.00	6.4	3.1	4.6	(+) 0.1	(-) 1.8
1999-2000	3.00	6.4	1.9	4.9	(-) 1.1	(-) 1.5
2000-2001	3.00	6.4	1.3	4.8	(-) 1.7	(-) 1.6

Targeted depths in navigation channel not achieved.

The targeted navigable depth to be achieved over the bars in the shipping channel to KDS ranged between 3 metre (m) and 3.5 m in 1996-2001. However KoPT was unable to even achieve the minimum depth of 3m over the bars located between Kolkata and Hooghly point, except only in 1998. Similarly against the targeted navigable depth of 6.4 m to 7.1 m over the four bars in the HDC shipping channel, KoPT could not achieve the minimum depth of 6.4 m at the Jellingham bar.

Thus there was always shortfall in targeted minimum depth over all the bars in KoPT during 1996-2001 except the bars located between Kolkata and Hooghly point in KDS in 1998-99.

2.2.4.3 Dredging operations through KoPT's and DCI's dredgers

Working of KoPT 's and DCI's Dredgers

Maintenance dredging in the shipping channel was carried out by KoPT through the contractors, DCI and HAM, in addition to KoPT's own dredgers.

Availability *vis-a-vis* utilisation of KoPT dredgers engaged for river dredging during 1996-2001 are as follows:

Year	Total fleet strength of dredgers with KoPT	Total available days	Actual utilisation (in days)	percentage of utilisation
(1)	(2)	(3)	(4)	(5) [4/3x100]
1996-1997	3	1095	94	9
1997-1998	3	1095	288	26
1998-1999	3	1095	242	22
1999-2000	3	1098	234	21
2000-2001	3	1095	408	37

Utilisation of dredgers by KoPT was woefully inadequate.

Thus the utilisation of KoPT dredgers engaged for river dredging ranged between 9 and 37 *per cent* during 1996-2001 even, if allowance is made for number of days that the dredgers, may have required for their own repairs and maintenance, the percentage of utilisation would not be at desirable level considering the fact that maintenance dredging was required to be a continuous process. Out of three dredgers, one was always out of commission except in the year 1999-2000 when two dredgers were out of commission.

Delays in repairs of KoPT's own dredgers.

The Port Trust was amazingly slow to undertake action on repairs of its dredgers. A dredger 'Mahaganga', which was laid up for repair since January 1997 till August 2001 to complete its repairs. Since work order granted six months for repairs, the rest of the time was departmental delay. In this process, besides idle expenditure of Rs 6.31 crore during 1998-2001, KoPT also incurred an expenditure of Rs 230 crore for dredging of 18 m.cu.m by hired dredgers, which could have been done by Mahaganga.

Yet another instance of unplanned and careless use of the dredger was Suction Dredger (SD) Subarnarekha, which was deployed off SSOJ/Balari, Haldia region and other locations of river Hooghly from July 1998. Although HDC had bunkering arrangement, the dredger while operating in and around Haldia, was calling at Budge Budge for receiving fuel and fresh water travelling additional distance ranging between 67 and 152 kilometre. As a result effective dredging days were lost for every trip to Budge Budge in addition to consumption of fuel for the trip from Haldia region to Budge Budge.

It was only in October 1999, that the Chairman, KoPT directed the bunkering of the vessel at Haldia to avoid the wastage of dredging days. The vessel, however, continued bunkering at Budge Budge and only from February 2001 the vessel started receiving fuel at Haldia. During the period from July 1998 to January 2001 the vessel undertook 32 trips to Budge Budge for bunkering.

Scrutiny revealed that out of 32 trips, in 13 trips there was a total loss of 41 effective dredging days and thereby a loss of 99255 cu.m quantity of dredging occurred. In financial terms, these meant an extra expenditure of Rs 1.16 crore by way of loss of dredging days.

KoPT stated in November 2001 that the vessel needed High Speed Diesel (HSD) for the generators and Light Diesel Oil (LDO) for her main propulsion machinery and bunkering at Budge Budge was inescapable as LDO was not available at Haldia. But the fact remained that both HSD and LDO was being supplied to the vessel since February 2001 by tanker lorry as done for all other Haldia based vessels and this arrangement was not considered earlier in respect of SD Subarnarekha for reasons not on record. Hence the contention of KoPT is not tenable.

Performance of KoPT's dredgers vis-a-vis hired dredgers

Year	KoPT dredgers			Hired dredgers.		
	No.of dredgers worked	Qty.of dredging (in lakh cu.m.) / cost (Rs in lakh)	Qty.of dredging per dredger(in lakh cu.m) / cost per cu.m (Rs)	No.of dredgers	Qty.of dredging (in lakh cu.m.) / cost (Rs in lakh)	Qty. of dredging per dredger(in lakh cu.m) / cost per cu.m (Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1996-1997	2	2.86/1057.87	1.43/369	4	106.56 /6520.66	26.64/61
1997-1998	2	4.87/783.10	2.44/161	4	118.17 /12624.33	29.54/107
1998-1999	2	4.09/881.73	2.04/216	8	248.02 /32810.39	31.00/132
1999-2000	1	4.18/752.90	4.18/180	10	205.72 /25476.69	20.57/124
2000-2001	2	5.67/1126.03	2.83/199	9	207.09 /26155.73	23.01/126
Average	2	4.33/920.33	2.41/212	7	177.11/ 20717.56	25.30/117

It is obvious from the table that the performance of hired dredgers was much better than KoPT's own dredgers. The average quantity of dredging per KoPT dredger was 2.41 lakh cu m whereas the same for hired dredger was 25.30 lakh cu.m. during the period 1996-2001. The average quantity of dredging per utilised day was 1.71 thousand cubic metres (t.cu.m) by KoPT dredgers and 14.11 t.cu.m. by hired dredgers during 1996-2001. The yearly average dredging per utilised day by KoPT dredgers also decreased by 46 per cent with reference to their performance in 1996-97.

The performance of KoPT dredgers vis-a-vis hired dredgers was very poor, cost wise this meant an extra outgo of Rs 20.67 crore during 1996-2001.

KoPT dredgers were also costlier to maintain and operate than that of the hired dredgers. Poor utilisation of fleet strength was the main contributory factor for higher dredging cost of KoPT dredgers. The obvious conclusion on such a dismal scenario by the departmental dredgers vis-a-vis the contractors'

dredgers was to get the dredging done through contractors only. If that was done KoPT could have saved Rs 20.67 crore during 1996-2001.

The dismal record of KoPT dredgers gets highlighted more when one reckons the fact that the performance of the hired DCI dredgers was itself not satisfactory. The average dredging per utilised day decreased by 11 *per cent* during 1996-2001 with reference to the year 1996-97 whereas the cost of dredging per utilised day by DCI dredgers increased by 32 *per cent*. Despite engaging four dredgers per year during 1996-97 and 1997-98 for dredging operation, DCI could utilise only 1320 days out of 2920 days available for dredging which resulted in shortfall in dredging during 1996-98 at HDC.

2.2.4.4 Dredging operations through contracts

The methodology for measuring dredged quantities is a very important aspect of dredging. There are three basic methods of measuring the dredging done. These are :

Methods of measurement of work done.

- (a) time duration measurement by fixation of daily rates which was followed by KoPT till May 2000.
- (b) in situ measurement for determination of quantity dredged through pre and post dredging surveys by means of echo recorders fitted to survey launches and
- (c) hopper volume measurement, whereby the quantity of soil taken on dredger is measured by applying a formula taking into account the bulk density of the dredged spoil determined through testing and a predetermined density of water alongwith the weight and quantity of dredged material determined through a computer fitted on the dredgers.

KoPT had only two big firms to whom contracts for dredging were awarded during this period viz. DCI and HAM. The table below describes the dredging work entrusted to these two firms during the period in question both on volume or unit rate basis and time rate basis.

Years	HAM		DCI	
	Mode of measurement	Quantity to be dredged by the contractor	Mode of measurement	Quantity to be dredged by the contractor
1996-1997	-	-	Time rate	Not provided in contract
1997-1998	-	-	-do-	-do-
1998-1999	Unit rate	8 m.cu.m	-do-	-do-
1999-2000	-do-	8 m.cu.m	-do-	-do-
2000-2001	-	-	Unit rate	-do-

All contracts with DCI till May 2000 were based on time rate for payments for dredging. The in-situ measurement of dredging i.e. the method for measuring

pre and post dredging depths through surveys was used to identify bars to be dredged but was not used in any of the contracts to make payments. Hopper volume or unit rate measurement was followed in KoPT only from February 1998 to July 1999 for dredging contracts with HAM, a private company, and from June 2000 for dredging through DCI.

2.2.4.4.1 Time rated Contracts

These contracts were glaringly deficient on many counts: besides contract performance was shoddy and contract management by KoPT was virtually missing.

KoPT did not follow the Ministry's instructions of December 1994 regarding entrusting the dredging work on the basis of competitive bids to break the monopoly of DCI. Dredging contracts were continuously awarded to DCI from 1975-76 without evaluating its capabilities despite its poor performance as also cost-effectiveness through competitive bidding.. The only exception was in 1997-98 when the additional maintenance dredging was entrusted to HAM. HAM dredgers were more efficient than DCI dredgers which were unable to maintain the depth of 5.7 m and 6 m achieved by HAM at Jellingham and Auckland respectively.

The daily hire rate contracts did not specify the quantum of dredged material to be lifted per load, the number of dredging loads daily and the minimum bulk density of the dredged material. Nor did the contracts incorporate any performance guarantee clause regarding quantity to be lifted and depth to be achieved. The speed was specified only in respect of two dredgers. Thus KoPT did not ensure contractual obligation *vis-a-vis* achievement of depth and required quantum of dredging.

Scrutiny of bills for payment to DCI for dredging during the period 1996-2000, with reference to daily dredging reports revealed that despite deviation from contractual clauses and functional irregularities, KoPT took no action to make the necessary deductions which led to excess payment as detailed in subsequent paras. However, no safeguard against such unsatisfactory performance was provided in the contracts.

The contracts specified the speed of 13 knots for dredgers XII and XIV. However, KoPT made some deductions from the bills for slow speed taking an arbitrary average speed of 10 knots. There was thus excess payment of Rs 16.42 crore between 1996-2001 on this account in respect of the two dredgers. Even after taking into account the speed of 10 knots as considered by KoPT an amount of Rs 0.56 crore, as found on checking of bills and DDRs in respect of dredger XII for the year 1998-99, had not been deducted.

The dredgers had bottom door leakage because of which dredged material was discharged in the shipping channel itself during the journey from dredging site to dumping grounds.

Faulty operation of several hopper doors of two dredgers resulted in around 1000 cu.m. of mixture being retained in the hopper after dumping thereby

reducing hopper capacity of each dredging cycle of the dredgers to approximately 3500 cu.m.

DCI Dredgers suffered from defects like bottom door leakage and non-operational hopper doors because of which KoPT made a payment of Rs 9.16 crore without getting desired results.

The financial implication of foregoing deficiencies viz. bottom door leakage of dredgers and non-operation of hopper doors in dredgers resulted in KoPT making excess payment of Rs 9.16 crore during 1996-2000 in the sample check in audit involving Rs 55.85 crore.

Dredging at Haldia Oil Jetty-I was carried out by a DCI dredger in January–February 2000, working 464.5 hours at daily hire rate of Rs 14.78 lakh. The contract provided for at least 16 hours dredging per day. Therefore, hire charges at the full rate were payable only for 16 hours work per day. It was seen that during the actual period of 41 days’ dredging the dredger worked for more than 16 hours only on 11 days. Therefore, 30 days’ payment should have been paid on pro-rata basis taking into account actual working hours against minimum working time of 16 hours as done by KoPT for dredging work at berths 4B and 12 of HDC. But payment was made to DCI at full rate for 29.03 days. No pro-rata deduction was made for the 30 days when dredgers failed to dredge for minimum of 16 hours daily. Due to non-application of the provision of agreement KoPT made an excess payment of Rs 43.86 lakh to DCI.

2.2.4.4.2 Quantity based contracts

2.2.4.4.2.1 Dredging contract with HAM

To clear the backlog of shortfall in dredging over past years, KoPT awarded the work of dredging in the Hooghly estuary in December 1997 to HAM through global tender at a tendered cost of Rs 280.45 crore for dredging 16 m.cu.m over a two year period. The work consisted of dredging at one main location (Jellingham) in the shipping channel to increase the depth of Jellingham to 5.8 metre below chart datum (MBCD) in the first year and to 6.3 MBCD in the second year. Limited dredging at another location (Auckland) was also to be done if required. The quantum of dredging as envisaged in the Bill of Quantities of the contract was 14 m.cu.m for Jellingham and two m.cu.m. for Auckland with the provision that requirement was approximate and it might vary subject to a limit of 20 *per cent*. Payment was to be made on the basis of actual quantity dredged. The KoPT assumed that the contractor had accepted their specification regarding the increase in depth and work would not be treated as complete unless the given depth was reached. The Chairman, KoPT while seeking sanction of the Ministry, also categorically mentioned that this was a depth guaranteed contract, unlike the existing dredging contracts, with provisions for safeguard against non-performance. However, this contention of KoPT was not borne out by facts subsequently when the issue of performance of the contract arose.

Work started in February 1998 and the contractor completed dredging of the requisite quantity by 22 June 1999 for which payment was made by KoPT even though, the contractor could achieve a depth of only 5.7 MBCD at Jellingham against the targeted depth of 6.3 MBCD stipulated in the contract. Work stopped on 18 July 1999 by which time the firm had dredged additional quantities without any **further improvement** in depth. The contractor claimed the performance of the contract and this was upheld by the Legal Advisor on account of deficiencies in contract conditions. A total amount of Rs 378.55 crore therefore became payable by KoPT. KoPT had paid Rs 369.52 crore till September 2001.

DCI pointed out ambiguities in proposed contract with HAM.

It was found by Audit that before entering into the contract with HAM, under the directions of Ministry, KoPT tried to obtain a price offer from DCI for the same scope of work, terms and conditions as in the Notice Inviting Tender (NIT) for global tender. In response, DCI expressed their apprehensions regarding the terms and conditions stating that achieving the stipulated depth was a theoretical assumption and might not be possible. Factors such as reshaling would affect the problem of adhering to any equation relating volume of silt dredged to the depth to be achieved. They pointed out that if the desired depth was not achieved by dredging the estimated quantity, the eventual situation regarding performance of the contract would remain vague. Further, the DCI did not want to accept the clause on depth tolerance of 0.5 MBCD nor the clauses on Liquidated Damages and Warranty.

Advice of DCI disregarded.

Setting aside these apprehensions expressed by DCI in writing on 28 August 1997, KoPT entered into contract with HAM in January 1998 with the quantity and depth as well as provision for tolerance as stipulated in the NIT. In reality, the NIT itself was flawed in so far as the specification regarding the maintenance of a particular depth was concerned. On account of the fact that while estimating the required quantity of dredging, apart from bulk density and re-shaling the side slope of the area to be dredged was not correctly estimated. A side slope of 1 in 15 was assumed while flatter side slopes of 1 in 55 and 1 in 75 should have been considered as per opinion of BE College.

In summary, therefore, despite expenditure of Rs 369.52 crore and additional liability of Rs 9.03 crore the objective of achieving requisite depth was not fulfilled.

2.2.4.4.2.1(a) Other Deficiencies in the Contract

- (i) The Bill of Quantities which forms a part of the contract document stated that dredging of silted material amounting to 14 m.cu.m was to be done at Jellingham. The quantum of dredging was estimated assuming:
 - a) in-situ volume of the dredged material for the first year to be 3.5 m.cu.m with 100 *per cent* reshaling. Therefore 7 m.cu.m

would have to be dredged in the first year and 14 m.cu.m would be dredged in two years.

- b) Average in-situ bulk density of dredged material was to be 1.79 gm/cu. cm.

Payments without regard for minimum stipulated bulk density of dredged material.

Bulk density is the density of the dredged material consisting of particles of variable sizes and characteristics. Bulk density is a deciding factor for working out the quantity of solids lifted from the river bed. The higher the bulk density, the greater is the weight of solids lifted indicating better achievement of depth. Dredged material having bulk density below 1.55 gm/cu.cm is mostly transient and colloidal in nature. Therefore dredging of material with this bulk density does not lead to any improvement of navigable depth.

The contract stipulated that the volume of dredged material would be computed considering its average bulk density, arrived at through random sampling.

Extra expenditure of Rs 7.43 crore on account of higher clay content in the dredged material.

BE College in its study reported that out of 116 samples of dredged material tested between November 1998 and June 1999, in 89 samples the clay content ranged between 15 *per cent* and 32.5 *per cent*. Test check of 64 samples in audit also showed that, as the clay content was more than 15 *per cent* KoPT certified and passed for payment 0.81 m.cu.m against 0.38 m.cu.m of material actually dredged resulting in extra expenditure of Rs 7.43 crore. This lapse occurred despite the fact that in the prescribed formats of daily dredging reports there are columns to separately note the sand, silt and clay contents of the material dredged which were not filled up at the time of measurement. Even after the mistake by pointed out by BE College study, KoPT did not deduct the excess payment already made from pending claims of the contractor.

KoPT did not incorporate any provision in the contract for proportionate adjustment of payable volume for variation of bulk density from 1.79 gm/cu.cm as it later date in the case of dredging by DCI from June 2000. Nor did it consider the fact that quantity to be dredged would increase if bulk density was lower than 1.79 gm/cu.cm. The actual bulk density of material dredged by HAM was found to be 1.63 gm/cu.cm on an average. Due to absence of any clause for proportionate adjustment of payable volume to in-situ bulk density in the contract an amount of Rs 21.39 crore could not be adjusted. KoPT also made an inadmissible payment of Rs 68.24 crore to HAM for dredging material with bulk density below 1.55 gm/cu.cm.

Though unit rates different for different locations, bulk density of material averaged for payments.

- (ii) The contract did not contain any clause on liquidated damages nor any warranty clause, because the depth achievement clause itself was vague.
- (iii) The unit rate of dredging for the two dredging locations, Jellingham and Auckland was different. For Auckland area, the rate was much lower. However the bulk density of material dredged at these two different locations was averaged in November, 1998 for computing the payable volume which resulted in net overbilling of Rs 13.80 lakh.
- (iv) As per contractual stipulation payment was to be made on the basis of daily dredging and disposal record. But payment has been made only on the basis of daily dredging record and no record was maintained for disposal of dredged material. Thus there was no safeguard against the possibility of residual material remaining in the hopper after disposal thereby allowing for possibility of inflating the quantity dredged in the subsequent loads.

2.2.4.4.2.1(b) Payment beyond scope of contract and without sanction

HAM was permitted to dredge 1.303 m.cu.m at Jellingham beyond the contract stipulation. The Bill of Quantities in the contract clearly specified the quantity to be dredged at Jellingham (14 m.cu.m) and at Auckland (2 m.cu.m). Dredging at Auckland was mainly carried out through other agencies. The quantity specified in the contract i.e. 2 m.cu.m was to be dredged by HAM at Auckland only to maintain a 0.2 m higher draught at Auckland than at Jellingham. The rate of payment for dredging at Auckland was lower than at Jellingham. Thus the excess dredging at Jellingham should have been calculated on 14 m.cu.m \pm 20 per cent which works out to 16.8 m.cu.m. Instead HAM was allowed to dredge 18.103 m.cu.m i.e. 1.303 m.cu.m above the stipulated quantity. This resulted in extra contractual payment of Rs 22.38 crore.

In November 1997 the Ministry approved KoPT's proposal for maintenance dredging through HAM at a total cost of Rs 280.45 crore. On the basis of the total quantity of spoil lifted by HAM the payable amount worked out to Rs 378.55 crore. This additional expenditure of Rs 98.10 crore being more than 10 per cent of sanctioned cost of the work required the approval of the Ministry in terms of section 93 of Major Port Trusts Act, 1963. But no approval from the Ministry was obtained by KoPT. Thus expenditure of Rs 98.10 crore was incurred without the sanction of the Ministry and was irregular.

2.2.4.4.2.2 Dredging entrusted without Agreement with DCI

Work order without agreement with DCI.

The dredging at unit rate was entrusted to DCI from June 2000 without executing any formal agreement. Although the requirement of dredging and

depth was projected to DCI, KoPT have also failed to include any legal safeguards against non-performance despite the experience it had gained by then in dealing with the contract with HAM. DCI completed dredging in March 2001 but they also failed to achieve the required depth.

As mentioned in paragraph 2.2.4.4.2.1(a) earlier while commenting on contract with HAM, low bulk density of dredged material was largely responsible for the shortfall in the targeted depth.

Despite the significance of bulk density in assessing the quantity of dredged material in case of DCI bulk density was measured only from July 1999 although a column was provided for it in the DDR . Prior to this, KoPT calculated the total quantum of dredged material taking into account a predetermined bulk density of 1.79 gm/cu.cm across all dredging locations.

Payments however were made to DCI though effective bulk density was not achieved. In September 2000, KoPT assessed that 37.5 *per cent* of the total dredged material lifted by DCI during 19 July 1999 and 31 August 2000 had bulk density below 1.55gm/cu.cm. This would not have mattered for contracted payments to be made on the basis of time rate; however, for quantity based contract from June 2000 this amounts to excess payment. The port incurred an expenditure of Rs 75.80 crore in 2000-01 on dredging of material with bulk density below 1.55 gm/cu.cm. However it accepted a rebate of only Rs 40 crore from DCI for lifting material with low bulk density. This resulted in excess payment of Rs 35.80 crore.

Overall, comparison of daily hire rate with unit rate after KoPT started assessing bulk density, revealed that the unit rate of dredging from June 2000 was also not cost effective as the dredging cost per cu.m. during daily hire rate contract from July 1999 to March 2000 was Rs 77 whereas it was Rs 132 in case of unit rate during June 2000 to March 2001.

It was also found in audit that DCI entered into an agreement with a German dredger in March 2000 to supplement its dredging capacity against handling charges of five *per cent*. Had KoPT directly entered into the contract the amount of Rs 1.53 crore paid to DCI towards handling charges could have been saved.

Thus as a result of test audit it was found that excess payment amounting to Rs 113.02 crore as detailed below was made by KoPT to DCI and HAM during 1996-2001:

- (i) Excess payment of Rs 16.42 crore on account of slower speed of dredgers than what has stipulated in the contract.

- (ii) Excess payment of Rs 9.16 crore on account of bottom door leakage and reduction of hopper capacity of dredgers due to retention of undisposed materials in hopper.
- (iii) Excess payment of Rs 43.86 lakh on account of hours not worked by the dredger.
- (iv) Extra payment of Rs 7.43 crore on account of higher clay content in dredged material than tolerable leading to increase in volume paid for.
- (v) Excess payment of Rs 21.39 crore on account of non-adjustment of actual bulk density to 1.79 gm/cu.cm.
- (vi) Excess payment of Rs 22.38 crore on account of dredging more than the stipulated quantity.
- (vii) Excess payment of Rs 35.80 crore on account of material dredged by DCI with bulk density below 1.55 gm/cu.cm.

In addition to excess payment as mentioned above, unfruitful expenditure of Rs 68.24 crore on account of material dredged by HAM with bulk density below 1.55 gm/cu.cm was also incurred.

2.2.4.5 Disposal of dredged material

Management of dredged material is an important aspect of dredging. The material can be beneficially utilised for some productive purpose, viz. habitat restoration/enhancement, aquaculture, agriculture, forestry, horticulture, port development, development of urban and residential areas among other things. However, the dredged material of KoPT is not being gainfully utilised and is being dumped in the river itself.

Dumping and disposal of huge quantities of dredged material (around 15 to 20 m.cu.cm *per annum*) is one of the serious problem facing KoPT. The practice of dumping the material in deep pockets inside the estuary could not be continued after January 1998 due to shoaling of all such pockets. From February 1998 the dumping is done at sea-face off Saugor dumping buoy to allow the dumped material to be taken into the deep bay. Since such dumping is done during flood tide as well as ebb tide there is always a strong possibility of the dredged material returning back to the estuary during flood tide.

Para 20 of Report no. 9 of 1988 of the Comptroller and Auditor General of India mentioned that deterioration of depth at Jellingham Shoal despite intensive dredging was seen from 1975. This was due to recirculation of a significant *per centage* of the dredged material. A scheme for shore disposal at Jellingham was commissioned in December 1977 which envisaged pumping of four .m.cu.m of dredged spoil annually till August 1979. Of this 2.5 m.cu.m could be pumped ashore upto May 1986. The scheme was not cost

effective and was finally abandoned in June 1986 due to non-availability of land.

Recommendations of experts continued to be disregarded.

KoPT formulated a comprehensive scheme for improvement of draught in the river in 1981 which included a shore disposal terminal at Nayachara based on the Consultant's report. However in 1990 the Ministry deferred work on this component of the scheme. There is nothing on record to indicate that KoPT took any further decision on shore disposal till 1995 when due to the alarming condition of the navigational channel, discontinuation of free dumping within the river and setting up a terminal at Nayachara was again considered. However, KoPT's efforts did not bear any fruit since no bids for alternative proposal for dredging with shore disposal at Nayachara was received. Nor did development of Nayachara Island as envisaged in the alternative proposal take place.

Despite Nayachara island being available of dumping, KoPT delayed decision till May 2001.

KoPT stated in September 1999 that Prof. Sundermann, a leading expert in this field, while examining the comprehensive river regulatory scheme also ruled out dumping of dredged material in the river. He had indicated the location of the disposal grounds which included Nayachara island. The Ministry of Environment gave the necessary clearance for shore dumping at these locations in May 2000. However, instead of setting up the terminal at Nayachara where land was already available, KoPT identified several other sites for shore disposal without carrying out the necessary surveys. It was only in May 2001 that KoPT in consultation with DCI finally decided upon Nayachara Island as the site for shore disposal terminal.

Thus though land at Nayachara for dumping of dredged material was available from July, 1980 and KOPT was also aware of the urgency of setting up a shore disposal terminal as early as 1978; till October 2001 the terminal has not been set up. In sum therefore this has not been given consideration it deserved despite its urgency.

In the absence of the necessary infrastructure KoPT could carry out shore disposal of material amounting to 6.16 lakh cu.m. only dredged at just one location during maintenance dredging in 1999-2000.

2.2.4.5.1 Adverse impact of lack of Shore Disposal

Dumping of dredged material in the river bed had adverse impact as detailed below :

- (i) CHE in his report of April 1996 stated that free dumping of dredged spoils at deep locations within the river had contributed to the adverse developments in the estuary, specially in the Haldia-Balari channel. At least 10 to 15 *per cent* (22-33 m.cu.m) of the total quantity dredged in the last 15 years (225 m.cu.m) must have recirculated within Haldia-Balari channel resulting in accretion specially at the western face of

Nayachara Island, thus constricting the channel near Haldia anchorage. KoPT was aware of this from 1992-93 when radiotracer studies indicated that the dumped material had largely gone to the shallow side i.e. on the western face of the Nayachara island.

43 per cent of dredged material continuously circulating back to main channel.

- (ii) In a survey carried out in May 2001, the Chief Hydrographer, KoPT, stated that 27.5 m.cu.m. of material constituting 43 *per cent* of the dredged spoil was circulating back to the main channel leading to Kolkata and Haldia as the Saugor dumping area was already saturated and could no longer hold the dredged spoil. Thus dredging of 27.5 m.cu.m. of material at an expenditure of Rs 206.25 crore was rendered ineffective. This re-circulation also resulted in substantial deterioration of the western channel.
- (iii) The disposition of dredged material at 'Saugor buoy' involved a journey time of 18 to 19 hours daily, for covering an approximate distance of 40 kilometres. Effective dredging was thus limited to only 5 to 6 hours and 4 to 5 loads daily. This not only slowed down dredging but also increased reshaling as rate of dredging has a direct impact on reshaling.
- (iv) Audit scrutiny revealed that 'Maragolia Buoy' was used as dumping site upto January 1998 but during the period 2000-2001 a quantum of 10.62 lakh cu.m of dredging was carried out 6-7 knots away in 'Maragolia Crossing'. Thus due to wrong selection of disposal site KoPT had to incur an expenditure of Rs 10.65 crore on dredging at this location.

Thus due to lack of effective action on part of KoPT the shore disposal terminal has not been set up thereby reducing actual dredging time and resulting in increased recirculation of dredged material. Moreover the objective of reducing annual maintenance dredging as recommended by Gole Committee as early as 1978 could not be achieved even till November 2001.

2.2.4.6 Impact of shortfall in depth on revenue earnings.

Failures to maintain channels impacted revenues of the Port.

KoPT admitted that due to non availability of draught, traffic was diverted to other ports resulting in loss of revenue to KoPT. The port assessed that every one metre increase in depth yielded revenue of Rs 66.95 crore on increased cargo handling in HDC. As the shortfall in navigable depth ranged between 1.5 m and 1.9 m in 1996-2001 HDC had to forego an increase of Rs 575.78 crore in its cargo handling income during this period as bigger vessels could not be accommodated. The port did not work out the corresponding increase in income in case of KDS.

Due to inadequacy of desired depth for accommodation of bigger vessels at Haldia, lighterage operation commenced from September 1997 alternately at Saugor and at Sandheads (only in winter) through transfer of cargo from bigger vessel to daughter vessel. But due to draft restriction at Saugor, during 1997-2001 Suez Max tankers had to lighterage at Vizag as the draft at Saugor permitted load of only around 50000 Metric tonne (MT) instead of the full tanker load of 140000 MT. Thus, inspite of lighterage operation, the vessel with full load could not be accommodated in HDC, thereby causing revenue loss to KoPT amounting to Rs 49.69 crore during September 1997 to January 2001. Moreover, to promote transshipment of crude traffic at KoPT, the BoT of KoPT sanctioned in August 1997 levy of single wharfage in supersession of scale of rates provision for 1.5 times wharfage. This resulted in decrease of revenue earnings by Rs 42.56 crore during the period from September 1997 to March 2001 apart from incurring expenditure of Rs 10.74 crore on hire charges of tugs deployed for lighterage operation.

It was seen in audit that due to decrease of depth by one metre in KDS during April to November, 1997 the POL traffic decreased by 0.88 Million metric tonne leading to revenue loss of Rs 7.52 crore.

2.2.5 Idle associated facilities for dredging

For the survey work connected with dredging KoPT maintained two survey vessels and ten survey launches during 1996-2001. The years when the survey vessels and launches were completely lying out of commission alongwith operating cost there against are shown below :

Year	No. of survey vessels lying out of commission.	Operating expenditure of the vessel lying out of commission (Rs in crore)	No. of survey launches lying out of commission	Operating expenditure of the launches lying out of commission (Rs in crore)
(1)	(2)	(3)	(4)	(5)
1996-1997	1	0.75	3	0.24
1997-1998	1	0.53	5	0.39
1998-1999	2	1.31	9	0.68
1999-2000	2	2.56	9	0.65
2000-2001	-	-	7	0.49

Thus, failure to utilise the survey vessels and launches resulted in idle operating cost of Rs 7.60 crore during 1996-2001.

Two launches were attached with two KoPT dredgers for catering to any exigencies. Launches 'Satrughna' and 'Kush' were lying out of commission for the period of four and three years respectively during 1996-2001. Thus,

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failure to utilise the launches resulted in idle operating cost of Rs 0.72 crore during 1996-2001.

The matter was referred to the Ministry in November 2001; their reply was awaited as of January 2002.