Chapter VI

Findings, Suggestions and Conclusion
FINDINGS, SUGGESTIONS AND CONCLUSION

6.1 FINDINGS

6.1.1 Introduction

The present study entitled "Infrastructure and Performance of major ports in India" is divided into two parts. The first part comprising of introduction, objectives, methodology of the study and significance of the study. It also exhaustively deals with various aspects of infrastructure, its role, significance with special reference to port sector, performance of ports, prospects and challenges. The second part constitutes the core of the study consists of three chapters. It encompasses the analysis of collected data supplemented by preliminary discussions on the infrastructure, growth, achievements, and policy guidelines of the government, opportunities, and challenges. It also highlights the state of infrastructure facilities in Tamil Nadu and in India. The study is the empirical analysis of the progress and performance of Chennai and Tuticorin port covering the period from 1999-00 to 2004-05.

An attempt has been made to make a comprehensive analysis of the operations of the port between 1999-00 and 2004-05. The objectives of the study are to analyse the infrastructure facilities available in major ports in India, analyse the performance of major ports in India and suggest the measures to improve the traffic performance of the major ports in India and to study the opinion of the port users regarding the infrastructure and performance of Chennai and Tuticorin ports. The main findings of the study are summarized in the following paragraphs.

6.1.2 Infrastructure Facilities in Indian Ports

Infrastructure is a basic need to create improved marketability, efficient resource utilization and increased opportunities for the public to participate in the development process through which greater investment, employment, and production can be realized. Power, telecommunication, roads, ports, transportation, water supply and sanitation, etc., are the components of physical or economic infrastructure. Social infrastructure includes health and human
resource development. These two segments of infrastructure are interdependent and hence complementary. Infrastructure development is of two types, namely, demand driven and supply driven infrastructure is desirable.

Due to inadequate infrastructural facilities, India is lagging behind other countries in inviting foreign direct investment. Though the investment in the infrastructure increases in absolute figures but in terms of percentage to GDP, it exhibits a declining trend. The India Infrastructure report estimates that the GDP in 1995-96 to about 7 percent in 2000-01 and 8 percent by 2005-06. Infrastructure investment will account for 22 to 25 percent of the GDP rising from about Rs.60,000 crore in 1995-96 to Rs.1,07,000 crore in 2000-01, Rs.1,80,000 crore in 2005-06, Rs.4,30,000 crore in 2010-11 and Rs.7,40,000 crore in 2015-16.

The major finding from the infrastructure facilities in Indian ports are given in the table.

Table. No: 6.1
Finding from the Infrastructure Facilities in Indian Ports (In Numbers)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Infrastructure</th>
<th>1st place</th>
<th>2nd place</th>
<th>3rd place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Depth-wise in Meter</td>
<td>Visakhapatnam -20.0</td>
<td>Chennai -19.2</td>
<td>Ennore -16.0</td>
</tr>
<tr>
<td>2</td>
<td>No. of berths</td>
<td>Mumbai -49</td>
<td>Kolkata -33</td>
<td>Visakhapatnam -23</td>
</tr>
<tr>
<td>3</td>
<td>Transit shed in Square meter</td>
<td>Kolkata -142766</td>
<td>Mumbai -123975</td>
<td>Chennai -42350</td>
</tr>
<tr>
<td>4</td>
<td>Warehouse in Square meter</td>
<td>JNPT -1197260</td>
<td>Tuticorin -479550</td>
<td>Chennai -132875</td>
</tr>
<tr>
<td>5</td>
<td>Open area in Square meter</td>
<td>Chennai -1318154</td>
<td>Paradip -1100000</td>
<td>Kandla -1070660</td>
</tr>
<tr>
<td>6</td>
<td>Tractor</td>
<td>JNPT -157</td>
<td>Chennai -47</td>
<td>Kolkata -34</td>
</tr>
<tr>
<td>7</td>
<td>Quay side gantry</td>
<td>JNPT -16</td>
<td>Chennai -4</td>
<td>Cochin,Tuticorin -2</td>
</tr>
<tr>
<td>8</td>
<td>Fork, Top lift, Reach stacker</td>
<td>Chennai -58</td>
<td>Cochin -47</td>
<td>Mumbai -43</td>
</tr>
<tr>
<td>9</td>
<td>Wharf cranes</td>
<td>Mumbai -41</td>
<td>Chennai -26</td>
<td>Visakhapatnam -25</td>
</tr>
<tr>
<td>10</td>
<td>Liquid cargo</td>
<td>Visakhapatnam -8</td>
<td>Kolkata -7</td>
<td>Kandla -6</td>
</tr>
<tr>
<td>11</td>
<td>Iron ore</td>
<td>Visakhapatnam -1200</td>
<td>Murmugao -1000</td>
<td>Chennai -600</td>
</tr>
</tbody>
</table>
6.1.3 Performance of Indian Ports

India has a vast coastline of nearly 7516 Kms stretching from east to west coast. Of the 12 major ports, six are located on the west coast and six on the east coast. And out of the total declared 186 major ports, 13 are non-working ports, 120 ports belong to the west coast states, 24 ports belong to east coast states and the rest 22 belong union territories. The primary responsibility for development and management of major ports rests with the central government. The major ports are governed by the Major Port Trust Act, 1963, which enables these ports to conduct regulatory as well as commercial functions. The state governments administer the minor and intermediate ports. At present, the Indian ports handle 90 percent of the country’s foreign trade by volume and 70 percent by value. Before independence, there were only 5 ports in India. The government in the independent India put emphasis on planned development through various Five-Year Plans. Until the end of the Eighth Five-Year Plan 227 MT of the traffic were handled as against the capacity of 220 MT at the ports. To meet the emerging challenges of growing port sector at par with international standards and to cope-up with huge investments needs for such departments, the government had adopted policy measures aimed at opening up the port sector for private investments. Besides the objectives of mobilizing substantial resources, the other objectives are improvement in productivity, efficiency, and quality of services, reduction in gestation period for setting up new facilities and to bring in new technology and improved management techniques for enhancing international competitiveness.

The traffic handled by the ports in India was 19.38 MT during 1950-51, which was increased to 33.12 MT in 1960-61, 55.58 MT in 1970-71 and 80.37 MT during 1980-81. In 1990-91, it has witnessed the traffic volume of 151.67 MT and further increased to a record level of 281.13 MT traffic during 2000-01. Out of total traffic handled at major ports, petroleum, oil and lubricants (POL) maintains the largest share of 43 percent iron ore 21 percent, coal 13 percent and fertilizer 5 percent. Out of total traffic of 369 MT during 2000-01, 76 percent
was handled by the major ports and 24 percent by the minor ports. Kandla, Visakhapatnam, Chennai and Mumbai ports together handled around 57 percent of the total traffic of all major ports.

The average output per ship berth-day at all major ports in India depicts an increasing quantity of 5167 tonnes during 1998-99 against 4912 tonnes in 1997-98. Even though the output per ship berth-day of liquid bulk exhibits a marginal fall from 12772 tonnes in 1997-98 to 11619 tonnes in 1998-99 in terms of volume of output, it remained in the second position after the dry bulk (mechanical). The output of dry bulks (mech.) was increased to 13346 tonnes in 1998-99 from 12275 tonnes in 1997-98. Among the ports, Mormugao port has the highest output per ship berth-day, of 10446 tonnes and 11076 tonnes during 1997-98 and 1998-99 followed by Kandla and New Mangalore having output of 8778 tonnes and 5707 tonnes in 1998-99 respectively. Due to increase in number of ships entering into the port and also the increasing efficiency of the berths with the use of mechanized instruments, there has been higher output per ship berth-day at all major ports of the country.

The average berth occupancy reveals fluctuating trend at the Indian ports during the nineties. Kandla port has the highest percentage of berth occupancy of 93.1 percent in 1998-99 followed by Tuticorin 85.2 percent and Chennai 81.2 percent. Calcutta port has the least berth occupancy of 48.4 percent during 1998-99. The reasons of fluctuating trend are attributed to problems encountered by individual ports, like labour unrest, breakdown of machinery, natural calamities, cyclones, higher tonnage tariffs and non-availability of mechanized berths.

The average turn-around time at almost all major ports have came down significantly to 5.7 days during 1998-99 as against 6.3 days during 1997-98. But this is far behind the international norms. For example, the average turn-around time for the ports at Singapore was only 6 to 8 hours. The analysis reveals that during 1998-99, Kandla port had the longest turn-around time of 8.3 days whereas Cochin port had the least turn-around time of 3.4 days. The break bulk and dry bulk (conventional) vessels have the highest turn-around time of 10.5
days and 9.2 days during 1997-98 and 10.5 days and 9.3 days during 1998-99 respectively, whereas the container vessels and liquid bulk vessels have the least turn-around time of 3.4 days and 4.1 days respectively during 1998-99. The decline in the turn-around time is due to addition of more number of mechanized berths and efficient labour management at all major ports.

Average pre-berthing time has also declined significantly during period 1996-97 to 1999-2000. The average pre-berthing time of all major ports was 3.6 days in 1996-97 which was reduced more than half to 1.5 days in 1999-2000. The container type vessels have the least pre-berthing time of 1.3 days whereas break bulk have the longest pre-berthing time of 3.4 days in 1997-98 which was lowered to 2.7 days in 1998-99. During 1999-2000 the Kandla port has the longest pre-berthing time of 3.04 days, whereas J.N. port has the least pre-berthing time of 0.64 day. Capacity addition into the ports by expansion and mechanization of berths and operation of new minor ports caused for declining trend in pre-berthing time at the Indian major ports.

The average non-working time at major ports has also declined considerably during 1999-2000. From the analysis, it is clear that out of 12 major ports, 6 have less than one day average non-working time at their berths. These are Paradip, Visakhapatnam, Cochin, Mormugao, Kandla and J.L.Nehru port. The rest 6 ports are also in just above average of a day but less than 2 days. Calcutta port has the highest average non-working time of 1.88 days and JNPT has the least average non-working time of 0.13 day in the corresponding year. The analysis further describes that, the fertiliser berths have the longest and liquid bulk berths have the least non-working time at major ports during 1999-2000.

The traffic handled by minor and intermediate ports have increased in absolute terms from 8.37 MT in 1986-87 to 87.9 MT in 2000-01.In terms of percentage, it rose from 8 per cent in 1994-95 to 17 percent in 1999-2000 and 24 percent in 2000-01.

The capacity utilisation at Indian major ports was satisfactory during Five-Year Plan. With the increase in aggregate port year plan, the traffic handled at
major ports are also increased from 23 MT to 424 MT during the corresponding period. Out of the Nine Plans, the port capacity was utilized above 100 per cent during 3rd Plan and above 90 percent during the rest 5th plan period. The overall capacity utilization of major ports was 105 percent during 1999-2000 with 271.92 MT of traffic handled against the capacity of 258.05 MT. As per the norms fixed GOI, normally berth occupancy should be 75 percent. Handling of traffic beyond the normal capacity of the berth at the Indian ports indicates the absence of adequate matching facilities. The ports, which above 100 percent capacity utilisation during 1999-2000 were Chennai (135 percent), Visakhapatnam (128 percent), Calcutta (124 percent), Kandia (119 percent) and Paradip (106 percent) and the rest have above 70 percent of capacity utilisation.

The major finding from the infrastructure facilities in Indian ports are given in the table.

Table. No: 6.2
Finding from the Performance of Indian Ports (000 tonnes)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Performance</th>
<th>1st place</th>
<th>2nd place</th>
<th>3rd place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Over all traffic</td>
<td>Visakhapatnam - 55801</td>
<td>Chennai - 47248</td>
<td>Kandia - 45907</td>
</tr>
<tr>
<td>2</td>
<td>Break bulk</td>
<td>Mumbai - 6401</td>
<td>Kandia - 4785</td>
<td>Chennai - 2229</td>
</tr>
<tr>
<td>3</td>
<td>Container</td>
<td>JNPT - 33777</td>
<td>Chennai - 11757</td>
<td>Tuticorin - 3428</td>
</tr>
<tr>
<td>4</td>
<td>Liquid cargo</td>
<td>Kandia - 29769</td>
<td>Mumbai - 29109</td>
<td>New Mangalore - 22995</td>
</tr>
<tr>
<td>5</td>
<td>Mechanized dry Bulk</td>
<td>Murmugao - 21357</td>
<td>Paradip - 16206</td>
<td>Visakhapatnam - 15257</td>
</tr>
<tr>
<td>6</td>
<td>Conventional dry cargo</td>
<td>Visakhapatnam - 20872</td>
<td>Chennai - 12560</td>
<td>Haldia - 10238</td>
</tr>
</tbody>
</table>

6.1.4 Opinion of Port Users Regarding the Infrastructure and Performance of Chennai and Tuticorin Ports

a) Profile of the Respondents

1) In respect of form of organisation, in Tuticorin, 125 sample respondents are private limited companies, 92 respondents sole proprietors, 124 respondents partnership and 48 respondents public limited companies.
In Chennai port, 197 sample respondents are private limited companies, 58 respondents sole proprietors, 114 respondents partnership and 52 respondents public limited companies. It is noted that partnership and private limited companies occupy considerable share in shipping business of the study area.

2) In respect of type of port user, 125 respondents are steamer agents (Main line & feeder operator), 70 respondents are shippers i.e. exporters and importers, 112 respondents are clearing & forwarding agents and 82 of them are stevedoring agents in Tuticorin port.

In Chennai port, 125 respondents are steamer agents (Main line & feeder operator), 90 respondents are shippers i.e. exporters and importers, 138 respondents are clearing & forwarding agents and 68 of them are stevedoring agents.

3) With respect of port preference criteria, In Tuticorin port, 115 respondents have mentioned that the port is preferred for speed, 114 respondents have mentioned nearness, 64 respondents have mentioned safety, 49 respondents have mentioned strike free port, 22 respondents have mentioned economy and 16 respondents have mentioned well equipped.

In Chennai port, 130 respondents have mentioned that the port is preferred for speed, 113 respondents have mentioned nearness, 98 respondents have mentioned safety, 7 respondents have mentioned strike free port and 35 respondents have mentioned economy.

4) 368 respondents are aware that the ISPS code system followed in Tuticorin port and 21 respondents are not aware the implementation of the system. In Chennai port, 298 respondents are aware of the implementation of the system and 123 respondents are not aware the implementation of the system.

b) Profile of Services

1) With respect to the nature of services, in Tuticorin port, 105 respondents offer steamer services (Main line & feeder operation), 102 respondents
offer clearing and forwarding services, 82 respondents are doing export, import business, 70 respondents offer stevedoring services and the remaining 30 respondents offer freight forwarding business.

In Chennai port, 112 respondents offer steamer services (Main line & feeder operation), 110 respondents offer clearing and forwarding services, 68 respondents are doing export, import business, 90 respondents offer stevedoring services and the remaining 41 respondents offer freight forwarding business.

2) 245 sample respondents are satisfied with the infrastructure facilities provided by the Tuticorin port to deal with their logistics functions and 144 respondents are not satisfied with the port infrastructural facilities.

In Chennai port, 367 respondents are satisfied with the availability of infrastructure facilities and 54 respondents are not satisfied. The main reason was the non-availability of the adequate infrastructure like warehousing facilities for bulk cargo and outdated handling equipment for cargo handling.

3) In Tuticorin port, 137 respondents have taken their infrastructural facilities on hired basis from the port trust and private parties and the remaining on lease basis.

In Chennai port, 189 respondents have taken their infrastructural facilities on hired basis from the port trust and other private parties and the remaining on lease basis.

4) In Tuticorin port, 99 respondents are utilizing handling equipments, 90 respondents are utilizing loading/unloading facilities, 60 respondents are utilizing berth facilities and 60 respondents are utilizing the stuffing/destuffing facilities.

In Chennai port, 80 respondents are utilizing handling equipments, 95 respondents are utilizing loading/unloading facilities, 80 respondents are utilizing berth facilities and 60 respondents are utilizing the stuffing/destuffing facilities. The remaining respondents are utilizing the warehouse, packing and weighment facilities.
5) 299 respondents are paying the fee for the services availed from the Tuticorin port and 90 respondents availing these facilities free of cost.

In Chennai port, 322 respondents are paying the fee for the services availed from the port and 99 respondents availing these facilities free of cost.

6) In Tuticorin port, 80 sample respondents have their own storage facilities for their operations and 309 respondents are not having their own storage facilities.

In Chennai port, 421 respondents are not having their own storage facilities and the facilities are available for storage of the cargo.

7) With respect of nature of goods booked, in Tuticorin port, 142 respondents are booking the agricultural goods, 101 respondents granite stones, timber logs and construction materials, 72 respondents chemical items, 42 respondents Industrial goods and 32 respondents Petroleum products & coal.

In Chennai port, 103 respondents are booking the agricultural goods, 96 respondents granite stones, timber logs and construction materials, 90 respondents chemical items, 93 respondents Industrial goods and 39 respondents Petroleum products & coal.

8) In respect of goods being shipped, in Tuticorin port, 107 respondents are dealing with bulk cargo, 114 respondents are with break bulk cargo, 75 respondents are with containersed cargo, 42 respondents are with project cargo, 27 respondents are with automobile and 24 respondents are dealing with POL/liquid cargo.

In Chennai port, 101 respondents are dealing with bulk cargo, 128 respondents are with break bulk cargo, 86 respondents are with containersed cargo, 46 respondents are with project cargo, 36 respondents are with automobile and 24 respondents are dealing with POL/liquid cargo.
c) Infrastructure facilities assessment

Availability and Usage of Basic Infrastructure

1) Tuticorin and Chennai port users are highly satisfied with draught level of basin, approach channel to call feeder vessels and the satisfaction scores are 3.5 and 3.4 respectively. For mother vessels, they are not satisfied and the satisfaction scores are 2.4 and 2.5 for Tuticorin and Chennai respectively.

2) For berth accommodation is concerned, the port users of the Tuticorin and Chennai are satisfied and the satisfaction score was 3 and 2.6 respectively.

3) For ship repairing facility is concerned, the port users of Tuticorin and Chennai ports are not satisfied and the score was 2.2 and 2.6 respectively.

Table. No: 6.2 Findings from Hypothesis Testing - Basic infrastructure

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>P value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.027</td>
<td>0.05</td>
<td>Rejected</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.085</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Availability and Usage of Basic Flotilla

1) Tuticorin and Chennai port users are highly satisfied with the tugs utilisation rate and the average satisfaction score is 3.4 for both the ports.

2) The other facilities in both the ports are concerned, the pilot launches, mooring launches, water barges, floating cranes availability and utilisation rate is found medium and to be strengthened.

Table. No: 6.4 Findings from Hypothesis Testing - Flotilla

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>P value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.015</td>
<td>0.05</td>
<td>Rejected</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.457</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
Availability and Usage of Equipments

1) Tuticorin and Chennai port users are highly satisfied with the availability and usage of wharf cranes, locomotives, quay side gantry cranes, rubber mounted gantry cranes, reach stackers, front end loader, fork lift trucks, dumpers, mobile harbour crane, bumping facilities, conveyor belt system and the average satisfaction level is more than 3.4 for both the ports.

2) The respondents are not satisfied with the top lift trucks available in both the ports and the average satisfaction score is only 3.1 in both the ports.

Table. No: 6.5 Findings from Hypothesis Testing - Equipments

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>P value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.681</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.337</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Availability and Usage of Warehouse and Open Space

1) With respect to container stacking area is concerned, 178 respondents have mentioned that the availability of space is adequate, 130 respondents expressed just sufficient, 81 respondents opined inadequate in Tuticorin port.

In Chennai port, 185 respondents have mentioned that the availability of space adequate, 143 respondents have mentioned that the availability of space is just sufficient and 93 respondents have expressed that the availability of space is inadequate. In case of transit shed and warehouses is concerned, 44.3 were mentioned adequate, 34.0 mentioned just sufficient and 21.7 percent were mentioned Inadequate.

2) 168 respondents have expressed that the availability of transit shed is adequate, 134 respondents opined just sufficient and 87 respondents have opined inadequate in Tuticorin port.
In Chennai port, 191 respondents have expressed that the availability of transit shed is adequate, 142 respondents opined just sufficient and 88 respondents opined inadequate.

3) In respect of fenced area with security, 188 respondents have expressed that the availability of fenced area is adequate, 123 respondents have opined just sufficient and 78 respondents have opined inadequate in Tuticorin port.

In Chennai port, 177 respondents have expressed that the availability of fenced area is adequate, 149 respondents have opined just sufficient and 95 respondents have mentioned inadequate.

4) In case of ground slots and yard, 177 respondents have expressed that the availability of ground slots is adequate, 129 respondents have opined just sufficient and 83 respondents have opined inadequate in Tuticorin port.

In Chennai port, 187 respondents have expressed that the availability of ground slots is adequate, 143 respondents have mentioned just sufficient, 91 respondents have mentioned inadequate.

5) With respect to reefer plug points at container terminal, 178 respondents have mentioned that the availability of reefer plug points are adequate, 129 respondents have expressed just sufficient, 82 respondents have mentioned inadequate in Tuticorin port.

In Chennai port, 189 respondents have expressed that the availability of reefer plug points are adequate, 144 respondents have expressed just sufficient, 88 respondents have opined inadequate.

6) In bond manufacturing facilities is concerned, 183 respondents have expressed that the availability of inbond manufacturing facilities are adequate, 125 respondents have opined just sufficient, 81 respondents have mentioned inadequate in Tuticorin port.

In Chennai port, 183 respondents have mentioned that the availability of inbond manufacturing facilities are adequate, 143 respondents have opined just sufficient, 93 respondents have mentioned inadequate.
Availability and Usage of Miscellaneous Facilities

1) In case of open lands, 173 respondents have mentioned adequate, 129 respondents have expressed just sufficient, 87 respondents have opined inadequate regarding the availability of land in Tuticorin port.

In Chennai port, 188 respondents have expressed adequate, 146 respondents have opined just sufficient, 87 respondents have opined inadequate regarding the availability of the open land.

2) The liner facility is concerned, 186 respondents have expressed that the availability of direct liner facility from Tuticorin port is adequate, 120 respondents have opined just sufficient, 83 respondents have opined inadequate.

In Chennai port, 190 respondents have expressed that the availability of direct liner facility is adequate, 143 respondents have opined just sufficient, 88 respondents have opined inadequate. This shows the Tuticorin and Chennai ports providing adequate direct liner facilities to the shippers.

3) 182 respondents have expressed that the availability of weather forecasting equipments are adequate, 126 respondents have opined just sufficient, 81 respondents have opined inadequate in Tuticorin port.

In Chennai port, 185 respondents have expressed adequate, 143 respondents have opined just sufficient, 81 respondents have expressed inadequate with respect to the availability of and usage of weather forecasting facilities.

4) With respect to indication about cyclone and natural calamities, 182 respondents have expressed that the availability of indication about cyclone and natural calamities is adequate, 126 respondents have opined just sufficient, 81 respondents have expressed inadequate in Tuticorin port.

In Chennai port, 185 respondents have expressed adequate, 143 respondents opined just sufficient, 93 respondents have opined inadequate with regard to the availability of indication about cyclone & natural calamities.
5) In respect to updating climatic changes by metrological department, 183 respondents have expressed that updating climatic changes by metrological department are adequate, 125 respondents have opined just sufficient, 81 respondents have expressed inadequate in Tuticorin port.

In Chennai port, 185 respondents have expressed adequate, 143 respondents opined just sufficient, 93 respondents have opined inadequate with regard to updating climatic changes by metrological department.

6) The connectivity from ICD/CFS is concerned, 236 sample respondents have expressed that the availability of ICD/CFS is good and 297 sample respondents have expressed adequate in Tuticorin port.

In Chennai port, 277 sample respondents have expressed that the availability of ICD/CFS is good and 297 sample respondents have expressed adequate.

7) 180 respondents have expressed adequate, 126 respondents have opined just sufficient, 82 respondents have expressed inadequate with respect to the availability of container repairing and yard facilities from Tuticorin port.

In Chennai port, 186 respondents have expressed adequate, 143 respondents have opined just sufficient, 92 respondents have expressed inadequate with regard to the availability of container repairing and yard facilities.

8) Availability of bunkering and fresh water facilities is concerned, In Tuticorin port, 211 respondents have mentioned adequate, 109 respondents have mentioned just sufficient and 69 respondents have mentioned inadequate.

178 sample respondents have mentioned that the above facilities are adequate, 145 respondents have expressed just sufficient and 98 respondents have mentioned inadequate in Chennai port.

9) With respect to information centre and library facilities is concerned, 183 respondents have expressed that the availability of information centre and library is adequate and 125 respondents have opined just sufficient, 81 respondents expressed inadequate in Tuticorin port.
In Chennai port, 185 respondents have expressed that the availability of information centre and library is adequate and 143 respondents have opined just sufficient, 93 respondents expressed inadequate.

10) In case of port owned transport facility is concerned, 193 respondents have expressed adequate, 111 respondents have opined just sufficient and 85 respondents have mentioned inadequate with respect to the availability of transportation facilities in Tuticorin port.

In Chennai port 181 respondents have expressed that the availability of transportation facilities is adequate, 146 respondents have opined just sufficient and 94 respondents have mentioned inadequate.

**Berth Allotment**

1) 225 respondents have expressed prompt, 117 respondents have opined seasonal and 47 respondents have expressed as and when with regard to the berth allotment meeting convened by traffic manager in Tuticorin.

In Chennai port, 238 respondents have expressed that the berth allotment meeting convened by traffic manager is prompt, 126 respondents have opined seasonal and 57 respondents have expressed as and when with regard to the berth allotment.

2) Fixed window vessel berthing for container, coal and liquid vessels is concerned, in Tuticorin port, 225 respondents have mentioned that the fixed window vessel berthing for container, coal, liquid cargo vessels is prompt, 117 respondents have opined seasonal and 47 respondents have expressed as and when.

In Chennai port, 238 respondents have mentioned that the fixed window vessel berthing for container, coal, liquid cargo vessels is prompt, 126 respondents have opined seasonal and 57 respondents have expressed as and when.

3) In respect of berth reservation, in Tuticorin port, 219 respondents have expressed that the berth reservation pattern is prompt, 116 respondents have opined seasonal, 54 respondents have expressed as and when.
In Chennai port, 236 respondents have expressed that the berth reservation pattern is prompt, 131 respondents have opined seasonal, 54 respondents have expressed as and when.

4) With respect to delay in and outward movement of vessels, in Tuticorin port, 341 respondents have expressed "no delay" in inward and outward movement of vessels and 48 respondents have mentioned the other option.

In Chennai port, 365 respondents have expressed "no delay" in inward and outward movement of vessels and 56 respondents have mentioned the other option.

5) Priority berthing scheme for bulk, break bulk cargoes is concerned, in Tuticorin port, 323 respondents have expressed the availability of priority berthing scheme for bulk, break bulk cargos and 66 respondents have mentioned the other option.

In Chennai port, 354 respondents have expressed the availability of priority berthing scheme for bulk, break bulk cargos and 67 respondents have mentioned the other option.

**d) Maintenance of Equipments – An Assessment**

1) Maintenance of wharf and locomotives is concerned, 162 respondents have expressed that the maintenance of wharf cranes and locomotives at Tuticorin port is planned maintenance, 167 respondents have opined periodical maintenance and 60 respondents have expressed timely maintenance.

In Chennai port, 174 respondents have stated that the maintenance of wharf cranes and locomotives is planned maintenance, 179 respondents have opined periodical maintenance and 60 respondents have expressed timely maintenance.

2) In Tuticorin port, 161 respondents have expressed that the maintenance of fire fighting equipments is planned maintenance, 168 respondents have opined periodical maintenance and 60 respondents have mentioned timely maintenance.
In Chennai port, 174 respondents have expressed that the maintenance of fire fighting equipments is planned maintenance, 179 respondents have opined periodical maintenance and 60 respondents have mentioned timely maintenance.

3) In Chennai port, 175 respondents have expressed that the maintenance of tugs, pilot launches and barges is planned maintenance, 178 respondents have mentioned periodical maintenance and 60 respondents have stated timely maintenance.

In Tuticorin port, 162 respondents have expressed that the maintenance of tugs, pilot launches and barges is planned maintenance, 167 respondents have mentioned periodical maintenance and 60 respondents have stated timely maintenance.

4) In respect of quay side gantry cranes and transtainers, in Tuticorin port, 162 respondents have expressed that the maintenance of quay side gantry cranes, transtainers is planned maintenance, 167 respondents have mentioned periodical maintenance and 60 respondents have stated timely maintenance.

In Chennai port, 175 respondents have expressed that the maintenance of quay side gantry cranes, transtainers is planned maintenance, 178 respondents have mentioned periodical maintenance and 60 respondents have stated timely maintenance.

5) 162 respondents have expressed planned maintenance, 165 respondents have opined periodical maintenance, and 62 respondents have mentioned timely maintenance with respect to the maintenance front-end loaders, forklift trucks, and reach stackers in Tuticorin port.

In Chennai port, 177 respondents have expressed planned maintenance, 179 respondents have opined periodical maintenance and 58 respondents have mentioned timely maintenance.

6) Maintenance of pumping facilities is concerned, 162 respondents have pointed planned maintenance, 167 respondents have mentioned periodical
maintenance, and 60 respondents have mentioned timely maintenance regarding the pumping facilities, coal and oil jetties in Tuticorin port.

In Chennai port, 175 respondents have pointed planned maintenance, 178 respondents have mentioned periodical maintenance, and 60 respondents have mentioned timely maintenance regarding the pumping facilities, coal and oil jetties.

7) With respect to hospital and first aid facilities, 160 respondents have expressed planned maintenance, 168 respondents have pointed periodical maintenance and 61 respondents have mentioned timely maintenance with respect to the maintenance of hospitals in Tuticorin port.

In Chennai port, 178 respondents have mentioned planned maintenance, 177 respondents have pointed periodical maintenance and 59 respondents have mentioned timely maintenance with respect to the maintenance of hospitals.

e) Scale of Rates Assessment

Vessel Related Charges

1) The respondents of the both the ports are highly satisfied with pilotage charges, tug hire charges, due for ships, berth hire charges and the average satisfaction score is more than 4.0 in all cases in both the ports.

2) The special rate for capital dredging is concerned, the port users are not satisfied and the average satisfaction score is 3.3 only in both the ports.

Table. No: 6.6

Findings from Hypothesis Testing - Vessel Related Charges

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>P value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.191</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.667</td>
<td>0.43</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
Cargo Related Charges

1) The port users of both the ports are satisfied with Wharfage dues, demurrage fee, storage fee for coverage area, break bulk handling charges and break bulk repacking charges and the average satisfaction score is more than 3.6 in all the cases.

2) The port users are not satisfied with storage fee for open area and transit area and the average satisfaction score is 3.4, 3.3 respectively in Tuticorin and Chennai ports.

Table. No: 6.7
Findings from Hypothesis Testing - Cargo Related Charges

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>p value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.301</td>
<td>0.05</td>
<td>Accepted</td>
<td>Not Significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.220</td>
<td>(-1.227)</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Container Related Charges

1) The port users are satisfied with charges for special services to reefer containers, Stevedorage for export and import containers and transhipment containers and Wharfage charges to containers since the average satisfaction score is more than 3.6 points in Tuticorin and Chennai ports.

2) The port users are not satisfied with respect to charges for handling containers using mechanical appliances, storage fee for empty and loaded containers and container stuffing and destuffing charges and the average satisfaction score is less than 3.4 points in all cases in both the ports.

Table. No: 6.9
Findings from Hypothesis Testing - Container Related Charges

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test</th>
<th>P value</th>
<th>Level of significance</th>
<th>H₀ accepted or rejected</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANOVA</td>
<td>0.034</td>
<td>0.05</td>
<td>Rejected</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>t-test</td>
<td>0.033</td>
<td>(-2.137)</td>
<td>Accepted</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
f) Service Assessment

The port users are giving more importance to infrastructure and CRM services and the next importance goes to marine services. The port users are highly satisfied with maintenance of infrastructure. CRM services and marine services is concerned, they are satisfied.

g) General Assessment

1) With respect to development activities of port, 115 respondents have expressed strongly agree with developmental activities in Tuticorin port, 214 respondents have mentioned agree and 60 respondents have mentioned neutral.

    In Chennai port, 125 respondents have expressed strongly agree with developmental activities in Tuticorin port, 232 respondents have mentioned agree and 64 respondents have mentioned neutral.

2) In respect of financial performance, 121 respondents have mentioned that the financial performance is good, 204 respondents have mentioned average and 64 respondents have mentioned poor in Tuticorin port.

    In Chennai port, 126 respondents have mentioned that the financial performance is good, 226 respondents have mentioned average and 69 respondents have mentioned poor.

3) On satisfaction of the role of port in regional and national development, 109 respondents are highly satisfied with the role of port in regional and national development, 213 respondents are satisfied and 67 respondents are neutral in Tuticorin port.

    In Chennai port, 129 respondents are highly satisfied with the role of port in regional and national development, 235 respondents are satisfied and 57 respondents are neutral.

4) Satisfaction on the role of central government in the development of port infrastructure is concerned, 109 respondents are highly satisfied with the role of central government in the development of port infrastructure, 215 respondents are satisfied and 65 respondents are neutral in Tuticorin port.
In Chennai port, 129 respondents are highly satisfied with the role of central government in the development of port infrastructure, 222 respondents are satisfied and 70 respondents are in neutral.

5) 323 respondents are aware of the different port operations allowed to private sector participation and 66 respondents are not aware of them in Tuticorin port.

In Chennai port, 354 respondents are aware of the different port operations allowed to private sector participation and 67 respondents are not aware of them.

6) On an average, 83.8 percent of the respondents are favoured the construction of new facilities within the existing port itself and 16.2 percent of them are suggested to have a new port instead of developing the existing one in both the ports.

7) In case of performance of existing private container terminal operator is concerned, on an average 29.6 percent are highly satisfied, 53.5 percent are satisfied and 16.9 percent are in neutral.

h) Performance indicator assessment

Vessel Related Parameters

1) Tuticorin and Chennai port users are highly satisfied with financial performance, the average parcel size and the preberthing time and the average satisfaction points are more than 1.855 in all the cases.

2) Idle time at berth is concerned, Tuticorin and Chennai port users are not satisfied and the average satisfaction score is 1.848 in all the cases.

Traffic Related Parameters

1) Port users of Tuticorin and Chennai are highly satisfied with the average output per ship berth day and the satisfaction score is 1.8494 in both the cases.

2) The port users of both the ports are satisfied with the traffic handled with installed capacity and the score is 1.8444 in both the cases.
Operation Related Parameters

1) The sample respondents are highly satisfied with the number of TEUs handled by the private container terminal operator and the score is more than 1.87 points in both the ports.

2) The respondent’s opinion regarding the number of vessel handled by both the ports is favourable and the score is 1.858 points.

I) Chi-Square Test

Table. No: 6.10

Findings from Hypothesis Testing - Chi-Square Test

<table>
<thead>
<tr>
<th>S.No</th>
<th>Factor</th>
<th>Inference*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Container stacking area</td>
<td>Not significant</td>
</tr>
<tr>
<td>2</td>
<td>Transit shed and warehouses</td>
<td>Not significant</td>
</tr>
<tr>
<td>3</td>
<td>Fenced area with security</td>
<td>Significant</td>
</tr>
<tr>
<td>4</td>
<td>Ground slots</td>
<td>Not significant</td>
</tr>
<tr>
<td>5</td>
<td>Reefer plug points</td>
<td>Not significant</td>
</tr>
<tr>
<td>6</td>
<td>Inbond manufacturing facilities</td>
<td>Significant</td>
</tr>
<tr>
<td>7</td>
<td>Open lands</td>
<td>Not significant</td>
</tr>
<tr>
<td>8</td>
<td>Direct liner facility</td>
<td>Not significant</td>
</tr>
<tr>
<td>9</td>
<td>Weather forecasting equipments</td>
<td>Not significant</td>
</tr>
<tr>
<td>10</td>
<td>Cyclone and natural calamities</td>
<td>Not significant</td>
</tr>
<tr>
<td>11</td>
<td>Updating climatic charges</td>
<td>Not significant</td>
</tr>
<tr>
<td>12</td>
<td>Container repairing facility and yard</td>
<td>Not significant</td>
</tr>
<tr>
<td>13</td>
<td>Bunkering and fresh water facilities</td>
<td>Significant</td>
</tr>
<tr>
<td>14</td>
<td>Library and information center</td>
<td>Not significant</td>
</tr>
<tr>
<td>15</td>
<td>Transport facilities</td>
<td>Significant</td>
</tr>
<tr>
<td>16</td>
<td>Berth allotment meetings</td>
<td>Not significant</td>
</tr>
<tr>
<td>17</td>
<td>Fixed window vessel berthing</td>
<td>Not significant</td>
</tr>
<tr>
<td>18</td>
<td>Berth reservation</td>
<td>Not significant</td>
</tr>
<tr>
<td>19</td>
<td>Maintenance of wharf cranes and locomotives</td>
<td>Not significant</td>
</tr>
<tr>
<td>20</td>
<td>Fire fighting equipments</td>
<td>Not significant</td>
</tr>
<tr>
<td>21</td>
<td>Tugs, pilot launches and barges</td>
<td>Not significant</td>
</tr>
<tr>
<td>22</td>
<td>Quay side gantry cranes and transtainers</td>
<td>Not significant</td>
</tr>
<tr>
<td>23</td>
<td>Front end loaders, fork lift trucks and reach stackers</td>
<td>Not significant</td>
</tr>
<tr>
<td>24</td>
<td>Pumping facilities, coal and oil jetties</td>
<td>Not significant</td>
</tr>
<tr>
<td>25</td>
<td>Hospital and first aid facilities</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

*Significant means there is a significant difference between the opinions of the port users regarding the concerned facility. Not significant implies the opposite.
j) **Factor Analysis**

From the factor analysis, the port users of Chennai and Tuticorin port are giving importance to *infrastructure* and CRM services and the next *Marine* services. The third and fourth importance goes to shipping and basic services respectively.

Regarding the port performance parameters, the port users of Chennai and Tuticorin port are giving importance to vessel related parameters and the next traffic related parameters.

k) **Gap Analysis**

The gap analysis reveals that the port users of Tuticorin port are satisfied with the performance parameters than the sample respondents of Chennai port.
6.2 Suggestions

6.2.1 Suggestions - Chennai Port

1) Development of second container terminal on Build Operate Transfer (BOT) basis and the project will ultimately increase the container handling capacity of the port by 8 lakh TEUs per annum.

2) To expedite the movement of cargo, a scheme for providing a dedicated elevated expressway from the Southern gate of Chennai port to Maduravoyal leading to the NH4 is to be formulated. This proposal will improve the connectivity of the port and facilities smooth movement road bound cargo to and from Chennai port.

3) In order to facilitate a long-term development plan for Chennai port, realignment of the rail and road network inside the port for quicker movement of cargo is required. Old structures in the proposed alignment of the road / railways are also being dismantled. This will enable upgrading of the road network inside the port from the southern and (Gate No.10) to the northern end (Gate No.1).

4) Creating back up area off-dock Container Freight Station (CFS) and parking area and the increase in the railway share of containers will boost the efficiency of container handling operations.

5) Creation of additional storage open area by reclaiming about 68 hectares of land at two locations, viz., at the area north of sand screen to an extent of 8 hectares and near Gate No.1 to the north of Bharathi Dock to an extent of 60 hectares.

6) Dredging the channels, Bharathi dock & Dr. Ambedkar dock is deepened to 15.5 m.

7) Development of additional open storage yard for facilitating parking of the export cars in WQ I and II.

8) Chennai - Ennore port road connectivity project and the major components of the work are (i) Shore protection works along the Ennore coast (ii) Four-laning
the Ennore Expressway (iii) Improving the Tiruvotiyur- Ponneri-Panjetti road. This will substantially improve the movement of road bound cargo to and from Chennai Port.

6.2.2 Suggestions - Tuticorin Port

1) The Container vessels calling at Tuticorin Port are mainly feeder vessels and main- line vessels are not calling at Tuticorin Port as adequate draught is not available for such vessels. Therefore, there is a need for deepening the Harbour basin and Channel to handle vessels up to 12.80m draught (i.e. From 10.70 m to 12.80 m) to meet the future Container traffic and to attract mainline vessels. To get a draught of 12.80m, the Harbour Basin has to be dredged to a depth of 14.00m and the approach channel has to be dredged to a depth of (-)14.60m for a length of 4100m. The Port entrance has to be widened from 152m to 230m by removing the existing pier heads and providing additional protective spurs to maintain the tranquillity conditions inside the dock basin as part of development works.

2) One of the bottlenecks of Tuticorin port is insufficient draught of basin. It is less than 11m at berth and less than 12.5 m at approach channel and dock basin. Using this draught, it is not possible to bring the mother vessels. Therefore, Tuticorin port should take steps to increase the draught of basin and approach channel.

3) Construction of Coal Berth at North Break Water (NCB) for Neyveli Lignite Corporation and Tamilnadu Electricity Board

4) Structural up-gradation of Coal Jetty –II to meet the coal import by Thermal Power Corporation.

5) Construction of Shallow draught berths for ship repairing and navigational purpose.
6) Construction of medium size ship-building yard at Tuticorin port and the potential investors are to be encouraged.

7) The traffic to be handled by the next 25 years is likely to increase tremendously and expected to touch 100 MT per annum. The traffic studies indicate Tuticorin has potential to become a container “HUB-PORT” for handling when the inner harbour would be saturated in about 3 years. The north and southern breakwaters will be further extended seawards and berth will be constructed to handle containers, POL, crude and coal.

8) The Sethusamudram Ship Channel project will allow ships sailing between the east and west coasts of India to have a straight passage through India’s territorial waters, instead of having to circumvent Sri Lanka. Substantial savings can be had in ship time and bunkering costs. There will be substantial savings for the shipping companies, exporters, importers and manufacturers. The project will contribute to the national economy, develop, the coastal districts of Tamil Nadu, and improve the international competitiveness of India’s export. It saves the mileage time and cost as follows.

**Table. No: 6.10**

*Expected Mileage after Implementing Sethusamudram Project*

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Existing Mileage</th>
<th>After S.S.P</th>
<th>Saving Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Comorin</td>
<td>Chennai</td>
<td>750</td>
<td>402</td>
<td>348</td>
</tr>
<tr>
<td></td>
<td>Visakhapatnam</td>
<td>1014</td>
<td>724</td>
<td>290</td>
</tr>
<tr>
<td></td>
<td>Calcutta</td>
<td>1352</td>
<td>1098</td>
<td>254</td>
</tr>
<tr>
<td>Tuticorin</td>
<td>Chennai</td>
<td>759</td>
<td>335</td>
<td>424</td>
</tr>
<tr>
<td></td>
<td>Visakhapatnam</td>
<td>1018</td>
<td>652</td>
<td>366</td>
</tr>
<tr>
<td></td>
<td>Calcutta</td>
<td>1371</td>
<td>1041</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td></td>
<td></td>
<td>335.3</td>
</tr>
</tbody>
</table>
9) Tuticorin is well known for seafood exports and the same is exported to US, Europe and other countries. In Tuticorin, there are no cold storage facilities and refrigeration plants. Now the marine products are routed through Cochin port. Therefore, the Tuticorin port should establish cold storage facilities with Marine Products Export Development Authority (MPEDA) a nodal agency for seafood export.

6.2.3 Suggestions- Chennai Port and Tuticorin Port

The following suggestions are made to improve the effectiveness of Chennai Tuticorin ports.

1) The port users opinion reveals that the privatization of the services will help to increase the efficiency of logistics practices in Tuticorin port. Hence the port should encourage privatization in its services rendered to port users.

2) The port users awaiting for direct main line vessel operation from Tuticorin port. Because if they want to send containers to Australia and other regions, the containers are taken in to Colombo port which is transhipment port. Then it will load to main line vessel which is going to the respective destinations. It consumes more time and money. Hence the port should take steps to call main line vessel operation from Tuticorin port.

3) The central and state government should take steps to increase investment in port-based industries in the hinterland of the port. It helps to phenomenal growth of container traffic through Tuticorin and Chennai ports.

4) The railway lines should be extended up to the terminal area. This helps to loading and unloading of containers from trains coming from ICD's of Bangalore, Coimbatore, Trichy, and Madurai.

5) The cargo handling equipments are lagged behind fast changing technology. Since the volume of transactions is increasing, the port should take immediate action to install new and modern equipments.
6) Systematic operations and procedures to be followed in both the ports in areas like Weighment, Documentation, Payment of port charges and Handling operations.

7) Cost cutting measures to be adopted with true sprit to match the global competitive rates in the port sector. The costs of handling cargoes in both the ports are high when compared to international ports.

8) Marine charges and cargo related charges are more Tuticorin port. The port authorities should take the necessary steps to reduce it.

9) Complexities in the documentation procedures need to be reduced so that the port user’s time can be saved.
6.3 Conclusion

India, being a major maritime nation, is critically dependent on its national port system to ensure sustainable economic growth through expanding exports and timely availability of essential items. At present India's port system comprises 12 major ports and 160 minor ports and handles about 90 percent in volume and 75 percent in value of India's foreign trade. Until the end of 20th century, there were severe capacity constraints in the ports and ships had to wait for berths whereas elsewhere berths wait for ships. However, in tandem with port policy of ongoing economic reforms, investment by private sector are allowed in Indian ports. Now with creation of some 60 million capacity through private investments, the assessed capacity of major ports is 291 million tonnes against which cargo handled in 2000-01 was 281 million tones. According to the Tenth Plan project made by the Ministry of Shipping, the capacity of ports is expected to be 470 million tones by 2007-08 against a cargo-handling requirement of 415 million tones.

The foregoing analysis reveals that inspite of immense potential, Indian ports so far have been able to exploit only 12.5 per cent of its 7516 kms long coastline. Though operational efficiency of major ports has improved over years when judged in terms of parameters like average pre-berthing time, average ship turn-around time, ship berth day output, etc., but fail to compare favorably with competing ports in the neighborhood. The reasons like poor utilization of equipment, over-staffing, cumbersome documentation procedures, such as customs clearance, inadequate port access facilities, and lack of inter-port and intra-port competition, inability of existing ports to handle new categories of cargo, etc. are attributed to less than satisfactory performance of Indian ports. These problems need to be redressed in right perspective so that our ports become cost effective, efficient, and globally competitive.

The major gain for Tuticorin port during the year was the Environmental Clearance received on 9th May, 2006 for the Inner Harbour Development Project comprising of Capital Dredging Scheme (for 12.8m. draft vessels), construction of five berths, procurement of cargo handling equipments and some floating
crafts. The stagnant capacity will consequently receive the much needed attention. Since the receipt of the environmental clearance, the port has commenced construction of berth IX at an estimated cost of Rs. 44.56 Crores and is on the verge of awarding of work for another Berth (North Cargo Berth at an estimated expenditure of Rs. 40 Crores. After obtaining in-principle approval for Capital Dredging at a cost of Rs. 442 Crores approximately from the Planning Commission of India, the PIB note has already been circulated by the Department of Shipping. This project is crucial for the survival of the port in the face of increasing competition from neighbouring ports and the port's focus on container volumes. It is a matter of concern and regret that when the port sector should launch an all-out effort to augment capacities to meet the increasing demands of a fast growing economy, policy issues especially the mode of investment (public Vs private, public-private participation), extent of government investment in this vital sector, modalities such as format of concession agreement, tariff setting etc have taken too long a time to resolve. The trend of increasing average pre-berthing detention time and average turn round time in most ports is an indicator of what is in store unless urgent action is taken on a war-footing to build capacities. An analysis of capacity addition in the 10th Five Year Plan in all ports including Tuticorin will show that most of the addition is due to productivity improvement and addition of quays and capital dredging have seen inadequate progress.

The cargo handling in Tuticorin port has grown significantly during the study period, i.e., 91.73 lakh tonnes in 1996-97 to 180.01 lakh tonnes in 2006-07, which is highest in port history. The cargo handling of Chennai port has grown from 436.06 lakh tones in 2004-05 to 472.48 lakh tones in 2005-06. The other parameters of performance like berth-day output, labour productivity, ship turn-around time, berth occupancy, pre-berth delay, operating surplus etc., of the port have shown improvement during the study period.

Despite the fact that all the major ports in India have shown resilience of growth and diversification during the study period, still they have the long way to go to catch up with the performance standards of foreign ports. The
infrastructural reforms based on the recommendations of Rakesh Mohan Committee, implemented way back in 1996, have started yielding results on the country. The privatization of Jawaharlal Nehru Port Trust (JNPT), India’s premier container port and Tuticorin and Chennai are the cases in point. The drive to corporatise the existing port is a move in right direction in ensuring operational flexibility and efficiency. In Tuticorin, the Sethusamudram Canal project was implemented and the result of this scheme in Tuticorin port is awaited. Though actions have been initiated, the pace of reform in port sector is slow and it evidenced from the fact that so far only Nava Sheva, Tuticorin and Chennai major ports and 2 minor port (Mundra and Pipavav) have been privatized. Except Ennore port, which has been set up initially as a company, no other port has been corporatised yet. Fast and discernible improvements in infrastructural facilities provided by Indian ports brook no delay because absence of adequate infrastructure would crumble the entire edifice of economic development of the country. Hence, port reform must be coherent and carry with it a sense of urgency. Unless this happens, India’s trade would fail to cope with increasing competition in international markets with high transport and transaction cost. Private sector participation is highly essential to supplement the efforts of the public sector to augment the capacity expansion and sustainable economic growth.