4.1 INTRODUCTION

A thousand years ago, India’s trade in the global market was significant. However the present scenario is critical. Presently, India’s share is only 2% of the global market. In the olden times, India had a vibrant maritime industry and people trading were incredibly good. Over the years, people’s expertise in maritime thrived but the same cannot be stated with respect to development of maritime industry. With the advent of globalization and coherent government policy in place, maritime development has become critical to India’s growth as a global power.

A port offers facility for receiving ships and transferring cargo. Normally they are built at the edge of river, ocean, sea or lake. Ports have equipment which handles cargo. Some of these are cranes and forklifts, which may be provided by individuals or public body. The use of the term Port also plays an important role while explaining the utility of ports. For example, the term sea port is used for ports which handle ocean going vessels, and the term river port means facilities which handle river traffic. The ports on lakes which have access to sea or ocean are called Inland Port. Ports also play an important role in the development of industries. Some of the industries are built near ports so that they can easily access the raw materials coming from other parts of the country. Similarly they are also useful in sending goods from one part of the country to another part.

Ports plays vital role in the overall economic development of the country. About 95% by volume and 70% by value of India’s merchandise trade passes through
Ports. There are 12 major ports and about 200 non-major ports along India's Coastline which is about 7517 km. in length. The 12 major ports are located at Kolkata/Haldia, Mumbai, Jawaharlal Nehru Port at Nhava Sheva, Chennai, Cochin, Visakhapatnam, Kandla, Mormugao, Paradip, New Mangalore, Tuticorin and Ennore. The major ports are under the direct administrative control of the Central Government while the non-major ports are under the jurisdiction of the respective Maritime State Governments.

4.2 INDIAN PORTS

Ports are the main gateway for the EXIM trade of any country. India is bestowed with a long coastline stretching over 7517 Kms on the east, south and west boundaries. At many places along this long coast line, there are many natural harbours ideally suited to locate ports. Further, these ports are well connected with the hinterland. India is dependent on other countries mainly for capital intensive machineries, crude, and certain chemicals whereas it exports garments, food grains, cars, etc. The entire import export activity of the country takes place through the Indian ports.

India has a long coastline extending over 7517 kms. This coast line is equipped with 12 major, 200 minor ports. Nearly 95 per cent of the countries transportation of goods is by sea, making development of ports critical for nation's progress. The major ports in India are maintained by the Central government, while all the other ports come under state.
The Indian Ports Act, 1908 and the Major Port Trusts Act, 1963 govern the functioning of major ports. The former enables the law to declare any port a major port, define port limit, and levy charges etc while the formation of Port trust Boards gives the administrators control and management of major ports.
MINOR PORTS

Minor ports come under the purview of Concurrence list and their administration is the responsibility of coastal states. Some of the prominent minor ports are Bhavnagar, Calicut, Karwar, Nagapattinam, Trivandrum, Veraval.

4.3 IMPORTANCE OF PORTS

Marine transport sector contributes over 0.2% to the country’s GDP at constant prices (1999-2000 prices). Transport sector’s contribution to the GDP has been increasing because of the growing economic activities in the country. Shipping industry plays a significant role in the Indian economy. Indian Ports are the gateways to India’s international trade by sea and over 95 per cent of India’s foreign trade by volume and about 70 per cent by value pass through India’s seaports. India is one of the leading maritime nations of the world with 6.8 Million Gross Registered Tonnage (GRT) rating 17th in the world.1 Indian ships carry about 30% of the cargo in India’s import and export trade equaling about 87.53 Million tonnes in 2002-03.2

The 12 major ports in India—six situated on the West Coast, namely, Kandla in Gujarat, Mumbai and JN port in Maharashtra, Mormugao in Goa, New Mangalore in Karnataka and Cochin in Kerala and six situated on the East Coast, namely, Kolkata, Haldia in West Bengal, Paradip in Orissa, Visakhapatnam in Andhra Pradesh, Ennore, Chennai and Tuticorin in Tamil Nadu.

The long coastline of India is dotted with 12 major ports which are managed by the Port Trusts of India under Central Government jurisdiction and 200 minor operable ports under the jurisdiction of the respective State Governments. The

1 http://www.investmentcommission.in/ports.htm
responsibility for development and management of major ports rests with respective Port Trusts under the Central Government. The state government administers the minor ports. The major ports handle 90 per cent of the all-India port throughput, and thus bear the brunt of sea borne trade.

CARGO TRAFFIC

The total traffic handled at the Major Ports during 2008-09 was 530.35 million metric tonnes (as against the target of 576 million metric tonnes).\(^3\) Despite the recessionary trends and decline in exports during the current year, the traffic registered a growth of 2.1 % over the previous year (2007-08). By the close of the 11th Five Year Plan, the traffic at Major Ports is targeted to be 708.09 million tonnes by 2011-12.\(^4\) Traffic handled by Non-Major Ports during 2008-09 was 202.18 million tonnes, registering a growth of 2% over the previous year\(^5\). The Non-Major Ports handled more than a quarter of the total traffic of the country during 2008-09.

During the current year, traffic handled at Major Ports from April to August, 2009 is 221.60 million tonnes, registering an increase of 1.76% over the same period of the previous year.\(^6\) Ports are a crucial part of the transportation infrastructure of the country. Transportation by ship is highly energy and cost efficient.

\(^3\) [http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx](http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx)
\(^4\) [http://ipa.nic.in/oper.htm](http://ipa.nic.in/oper.htm)
\(^5\) Indian Ports Association, Major Ports of India, A Profile: 2008-09-pg-106
The following table gives an overview of the traffic handled by the Major ports in 2007-08 and 2008-09.

**TABLE NO 4.1**

**TRAFFIC HANDLED AT THE MAJOR PORTS DURING 2007-08 AND 2008-09**

_IN MILLION METRIC TONNES_

<table>
<thead>
<tr>
<th>MAJOR PORTS</th>
<th>TRAFFIC DURING 2007-08</th>
<th>TRAFFIC DURING 2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOLKATTA</td>
<td>13.74</td>
<td>12.43</td>
</tr>
<tr>
<td>HALDIA</td>
<td>43.54</td>
<td>41.62</td>
</tr>
<tr>
<td>PARADIP</td>
<td>42.44</td>
<td>46.41</td>
</tr>
<tr>
<td>VISHAKAPATANAM</td>
<td>64.60</td>
<td>63.91</td>
</tr>
<tr>
<td>ENNORE</td>
<td>11.56</td>
<td>11.50</td>
</tr>
<tr>
<td>CHENNAI</td>
<td>57.15</td>
<td>57.49</td>
</tr>
<tr>
<td>TUTICORIN</td>
<td>21.48</td>
<td>22.01</td>
</tr>
<tr>
<td>KOCHI</td>
<td>15.81</td>
<td>15.23</td>
</tr>
<tr>
<td>NEW MANGALORE</td>
<td>36.02</td>
<td>36.69</td>
</tr>
<tr>
<td>MORMUGOA</td>
<td>35.12</td>
<td>41.68</td>
</tr>
<tr>
<td>MUMBAI</td>
<td>57.04</td>
<td>51.87</td>
</tr>
<tr>
<td>JAWAHARLAL NEHRU</td>
<td>55.76</td>
<td>57.28</td>
</tr>
<tr>
<td>KANDLA</td>
<td>64.89</td>
<td>72.23</td>
</tr>
<tr>
<td>TOTAL</td>
<td>519.15</td>
<td>530.35</td>
</tr>
</tbody>
</table>

SOURCE: INDIAN PORTS ASSOCIATION, OPERATIONAL DETAILS
NO 4.1G

TRAFFIC HANDLED AT THE MAJOR PORTS DURING 2007-08 AND 2008-09

SOURCE: INDIAN PORTS ASSOCIATION, OPERATIONAL DETAILS

CAPACITY ADDITION

The capacity of all Ports is expected to reach 1.5 billion tonnes with the Major Ports contributing 1 billion tonnes and the capacity of non-major ports is expected to touch 500 MMT.\(^7\)

The capacity of the 12 Major Ports under the Central Government was 504.75 million MT in 2006-07. As per the latest data released by the Ministry of Shipping, the capacity of all the Major Ports as on 31.3.2009 is 574 million tons.\(^8\) By 2011-12 i.e. by the end of the 11th Five Year Plan, the capacity is projected to increase to 1016.35MMT.\(^9\)

\(^7\) Report on Major Ports performance (2007), Ministry of shipping, Government of India
\(^8\) http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx
TABLE NO 4.2
CAPACITY OF MAJOR PORTS BY 2011-12

<table>
<thead>
<tr>
<th>MAJOR PORTS</th>
<th>1 BILLION TONNES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINOR PORTS</td>
<td>0.5 BILLION TONNES</td>
</tr>
</tbody>
</table>


GRAPH 4.2G
CAPACITY OF PORTS BY 2011-12

4.4 PORTS AND SHIPPING

There are twelve major ports and 200 minor ports in India. The twelve major sea ports are Kandla, Mumbai, Nhava Sheva, Marmagao, New Mangalore, and Kochi (formerly known as Cochin) on the west coast, and Kolkatta-Haldia, Paradip, Vishakhapatnam, Chennai, Ennore and Tuticorin on the east coast. The port at Nhava Sheva, located across the harbor from Bombay Port, was established in 1982 under the administration of the Jawaharlal Nehru Port Trust as a separate port rather than an adjunct to Mumbai port. The eleven ports in India are the responsibility of the Ministry of State for Surface Transport but are managed by semi-independent port trusts overseen by boards appointed by the ministry from government departments, including the navy, port labor and industry, and ship owners and shipping companies.

In order of gross weight tonnage conveyed annually, Mumbai, Vishakhapatnam, Chennai, and Marmagao are the most important ports in India. In addition, there are some 200 minor working ports along the two coasts and on offshore islands administered by local, state, or union territory maritime administrations. Total traffic at the major ports increased from 272 million metric tons in Financial Year 1999-2000 to 530.35 million metric tons in Financial Year 2008-09.


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The following table gives information about the cargo handled by 12 Major ports during last ten years.

**TABLE NO  4.3**

**CARGO HANDLED BY MAJOR PORTS DURING LAST TEN YEARS**

IN MILLION METRIC TONNES

<table>
<thead>
<tr>
<th>FINANCIAL YEAR</th>
<th>CARGO HANDLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>271.90</td>
</tr>
<tr>
<td>2000-01</td>
<td>231.10</td>
</tr>
<tr>
<td>2001-02</td>
<td>287.60</td>
</tr>
<tr>
<td>2002-03</td>
<td>313.60</td>
</tr>
<tr>
<td>2003-04</td>
<td>344.80</td>
</tr>
<tr>
<td>2004-05</td>
<td>383.60</td>
</tr>
<tr>
<td>2005-06</td>
<td>423.40</td>
</tr>
<tr>
<td>2006-07</td>
<td>451.56</td>
</tr>
<tr>
<td>2007-08</td>
<td>519.16</td>
</tr>
<tr>
<td>2008-09</td>
<td>530.35</td>
</tr>
</tbody>
</table>

**SOURCE: INDIAN PORTS ASSOCIATION, OPERATIONAL DETAILS**

(http://ipa.nic.in/oper.htm)
In order to improve efficiency, productivity and quality of services as well as to bring in competitiveness in port services, the port sector has been thrown open to private sector participation. The government has finalized a scheme for joint venture formations between major port and minor foreign ports. An amendment to the Major Port Trusts Act for this purpose has also been carried out recently.

The Major Port Trust Act, 1963 permits private sector participation in major ports. Foreign Direct Investment (FDI) upto 100% under the automatic route is permitted for construction and maintenance of ports and harbours. Private sector participation has been allowed in a variety of port services which includes construction and operation of terminals/berths, warehousing/storage facility, dry docking and ship repair facilities.
Two major government projects underway are:

- Project “Sethusamundram”: Dredging of the Palk Strait in Southern India to facilitate maritime trade through it
- Project “Sagarmala”: US$22 billion project for the modernisation of major and minor ports

In addition to these two major projects of Government of India, Major ports are also embarking on some important projects at individual port level which will enhance port capacity. The following table highlights some important projects of major ports in India.

| TABLE NO 4.4 |
| IMPORTANT PROJECTS OF Major Ports |
| Estimated Cost (Rs. in Million) | Capacity (MTPA) |

<table>
<thead>
<tr>
<th>Jawaharlal Nehru Port</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Container Terminal, NSICT</td>
<td>6000.00</td>
<td>13.20</td>
</tr>
<tr>
<td>BPCL Jetty</td>
<td>2000.00</td>
<td>5.50</td>
</tr>
<tr>
<td>Third Container Terminal</td>
<td>9000.00</td>
<td>15.60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mumbai Port</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of two new off Shore container berths and Development of container terminal on BOT basis in Mumbai Harbour</td>
<td>14600.00</td>
<td>9.60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mormugao Port</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Cargo Berths No. 5A &amp; 6A</td>
<td>2500.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kandla Port</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifth Oil Jetty (IFFCO)</td>
<td>215.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Oil Jetty related facilities at Vadinar (ESSAR)</td>
<td>7500.00</td>
<td>12.00</td>
</tr>
<tr>
<td>Oil Jetty awarded to M/s IOCL</td>
<td>207.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Container Freight Station</td>
<td>410.70</td>
<td>3.00</td>
</tr>
<tr>
<td>Container Terminal (Phase I &amp; II)</td>
<td>4465.40</td>
<td>7.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tuticorin Port</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Container Terminal (Berth No. 7)</td>
<td>1000.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Port</td>
<td>Project Description</td>
<td>Investment (Rs.)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Visakhapatnam Port</td>
<td>Construction of Coal Berth at NVW for NLC – TNEB</td>
<td>490.00</td>
</tr>
<tr>
<td></td>
<td>Container Terminal, Outer Harbour</td>
<td>1080.00</td>
</tr>
<tr>
<td></td>
<td>Multipurpose Berths – EQ-8 &amp; EQ-9</td>
<td>1960.00</td>
</tr>
<tr>
<td>Paradip Port</td>
<td>Captive Fertilizer Berth</td>
<td>261.70</td>
</tr>
<tr>
<td></td>
<td>Mechanisation of Cargo Handling Project-1</td>
<td>373.20</td>
</tr>
<tr>
<td></td>
<td>Mechanisation of Cargo Handling Project-2</td>
<td>251.30</td>
</tr>
<tr>
<td></td>
<td>Construction of Single Point Mooring Captive Berth</td>
<td>5000.00</td>
</tr>
<tr>
<td>Chennai Port</td>
<td>Container Terminal</td>
<td>4690.00</td>
</tr>
<tr>
<td></td>
<td>Development of Second Container Terminal</td>
<td>4950.00</td>
</tr>
<tr>
<td>Ennore Port</td>
<td>Marine Liquid Terminal</td>
<td>2490.00</td>
</tr>
<tr>
<td></td>
<td>Coal Terminal</td>
<td>3990.00</td>
</tr>
<tr>
<td></td>
<td>Iron Ore Terminal</td>
<td>4800.00</td>
</tr>
<tr>
<td>Kolkata (HDC)</td>
<td>Multipurpose Berth No. 4A</td>
<td>1500.00</td>
</tr>
<tr>
<td></td>
<td>Multipurpose Berth No. 12</td>
<td>300.70</td>
</tr>
<tr>
<td></td>
<td>Mechanisation at HDC berth no. 2</td>
<td>750.00</td>
</tr>
<tr>
<td></td>
<td>Mechanisation at HDC berth no. 8</td>
<td>750.00</td>
</tr>
<tr>
<td>Cochin Port</td>
<td>Crude Oil handling facility</td>
<td>7200.00</td>
</tr>
<tr>
<td></td>
<td>International Container Transshipment Terminal (ICTT)</td>
<td>21180.00</td>
</tr>
<tr>
<td></td>
<td>LNG Re-gasification Terminal</td>
<td>31950.00</td>
</tr>
<tr>
<td>New Mangalore Port</td>
<td>Construction of Captive Jetty for handling Coal by M/s NPCL</td>
<td>2300.00</td>
</tr>
</tbody>
</table>

SOURCE: http://ipa.nic.in/deve.htm

Till date 17 private sector projects involving an investment of Rs. 4927 crores has been operationalised which involves capacity addition of 99.30 MTPA. 8 projects are under various stages of evaluation and implementation which involves an investment of Rs. 5181 crores and capacity addition of 75.40 MTPA.
Major ports handle approximately 82 percent of the country’s trade through sea. The average turn around time and output per ship-berth-day at major ports have shown improvement during the last decade. The average turn around time has come down from five days to 4 days. Similarly the output per ship berth day has increased from in 5337 tonnes in 1999-2000 to 10473 tonnes in 2008-09.\textsuperscript{11}

The Ninth Plan estimate shows that 424 million tones (MT) Port capacity is required by the end of 9\textsuperscript{th} Five Year Plan period (2002). Against this, the capacity of the existing ports was 215 MT.

Some capacity yielding schemes carried over from the 8\textsuperscript{th} Plan were under implementation, raising the capacity to 252 MT. This left a gap of 172 MT. New Schemes in Major Ports for addition of 122 MT capacities requiring an estimated investment of Rs. 16,000 crores were proposed to be implemented. Capacity addition of about 50 MT is proposed through development of minor ports and building captive port facilities by the user industries. The capacity of major ports has increased from 20 Million Tonnes per annum (MTPA) 1951 to 504.75 MTPA as on 31st March, 2007. At the beginning of the 10th Plan, the capacity of the major ports was 343.95 MTPA which has increased to 504.75 MTPA at the end of the 10th Plan (i.e. as on 31st March, 2007) thereby achieving the capacity addition 160.80 MTPA. In all the years of 10th five year plan the capacity at the major ports exceeded the traffic handled

The total traffic handled at the Major Ports has increased from 313.55 MT at the beginning of the 10th Five Year Plan to 530.35 MMT in 2008-09 out of which the

\textsuperscript{11} Indian Ports Association. Major ports of India-A profile: 2008-09, pg -63 and 64
container traffic was 93.14 MMT. The container traffic in the major ports has increased from 61.98 MT in 2005-06 to 93.14 MMT in 2008-09. 80% of the port traffic by volume is dry and liquid bulk, remaining 20% is general cargo, including containers. Traffic in terms of principal commodities during 2008-09 and 2007-08 is given in the table below:

**TABLE NO.4.5**

**TRAFFIC IN TERMS OF PRINCIPAL COMMODITIES**

**DURING 2008-09 AND 2007-08**

**IN MILLION METRIC TONNES**

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>2008-09</th>
<th>2007-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>PETROLEUM AND CRUDE</td>
<td>176.14</td>
<td>168.75</td>
</tr>
<tr>
<td>IRON ORE</td>
<td>94.03</td>
<td>91.79</td>
</tr>
<tr>
<td>FERTILIZER</td>
<td>18.23</td>
<td>16.63</td>
</tr>
<tr>
<td>COAL</td>
<td>70.40</td>
<td>64.93</td>
</tr>
<tr>
<td>CONTAINER</td>
<td>93.14</td>
<td>92.27</td>
</tr>
<tr>
<td>OTHERS</td>
<td>78.59</td>
<td>84.94</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>530.53</td>
<td>519.31</td>
</tr>
</tbody>
</table>

**SOURCE:** MAJOR PORTS OF INDIA: A PROFILE: 2008-09, INDIAN PORTS ASSOCIATION (page No.31)

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12 http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx
Sixteen private sector projects involving an additional capacity of 58 million tones and an investment of Rs. 4427 crore have been approved by the government. For private participation from foreign ports in developing ports and facilities, the government has liberalized the entry norms. The Foreign Port(s) may implement the Scheme by promoting Indian company in the form of Special Purpose Vehicle (SPV), without equity contribution from Major Port Trust; or A Joint Venture Company
(JVC) may be incorporated under the Indian Companies Act with equity participation from Major Port Trust. The major Port Trust will maintain a controlling stake in the JVC.

4.5 PORT DEVELOPMENT AND CAPACITY ENHANCEMENT

Development of Ports is an ongoing process based on the requirement of the trade and the future projections of traffic and projects are taken up based on the requirement of individual ports to cater to the traffic. Capacity addition takes place through construction of berths jetties/terminals, mechanization of cargo handling facilities through procurement, replacement of equipment, deepening of channels/berths and other supplementing schemes for quicker evacuation of cargo through road and rail connectivity.

4.6 NATIONAL MARITIME DEVELOPMENT PROGRAM

With a view to modernize the ports, enhance the capacity for cargo handling, mechanization of operations at ports and benchmark its performance against international standards, the Ministry of Shipping (MoS) has finalized a National Maritime Development Programme (NMDP) to implement specific programme to modernize the port sector within a defined timeframe. Under the Programme, specific projects to be taken up for implementation over a period upto 2011-12 has been identified. Total investment involved under the Programme is Rs.1, 00,339 crore.\(^\text{13}\) Out of this, Rs. 55,804 crore is for the Port Sector and the balance is for the Shipping and Inland Water Transport Sectors. In the Major Ports, 276 projects covering the entire gamut of activities, namely construction/up gradation of berths, deepening of channels, rail/road connectivity projects, equipment up gradation/modernization

schemes and other related schemes for creation of backup facilities have been identified for inclusion in the Programme. Out of these, about Rs.34,505 crore is expected from private sector mainly in commercially viable projects like development and operation of berths, terminals, etc. Public funds will be principally used for creation of common user infrastructure facilities. With the above objective in view, a development plan up to 2011-12, has been formulated after assessing the National Traffic demand, additional capacity required to meet this demand, investment required and the funding pattern.

A National Maritime Development Programme (NMDP) was finalized by the Ministry of Shipping to implement specific programmes schemes for the development of the Port sector. Under the Programme, 276 projects to be taken up for implementation over the period from 1.4.2005 to 31.3.2012 have been identified. Total investment involved under the Programme is Rs.1, 00,339 crores at 2004-05 prices. Out of this, Rs. 55,804 crores is for the Port Sector and the balance is for the Shipping and Inland Water Transport Sectors.

In the Major Ports, projects undertaken under National Maritime Development Programme cover the entire gamut of activities, namely construction/up gradation of berths, deepening of channels, rail/road connectivity projects, equipment up gradation/ modernization schemes and other related schemes for creation of backup facilities have been identified for inclusion in the Programme.

The objective is to upgrade and modernize the port infrastructure in India which will enable it to benchmark its performance against global standards.

The NMDP includes all projects which were under implementation as on 01.04.05 or are likely to start till 31.03.2012. The Programme has been divided into two phases.
Phase-I comprises of the following:

- Plan works under implementation as on 01.04.05.
- Plan works expected to be started from 01.04.05 to 31.03.07
- Works which though likely to start after 31.03.07, but were expected to be completed by 31.03.09.

All other projects will be included in Phase-II.

The scheme-wise distribution of projects and the estimated cost is shown in the following table:

**TABLE NO.4.6**

**SCHEME-WISE DISTRIBUTION OF PROJECTS IN MAJOR PORTS OF INDIA**

<table>
<thead>
<tr>
<th>PROJECT SCHEME</th>
<th>NUMBER OF PROJECTS</th>
<th>ESTIMATED COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Deepening</td>
<td>25 projects</td>
<td>Rs.6304 crore</td>
</tr>
<tr>
<td>Berth construction</td>
<td>76 projects</td>
<td>Rs.32564 crore</td>
</tr>
<tr>
<td>Equipment</td>
<td>52 projects</td>
<td>Rs.2633 crore</td>
</tr>
<tr>
<td>Connectivity</td>
<td>45 projects</td>
<td>Rs.5956 crore</td>
</tr>
<tr>
<td>Others</td>
<td>78 projects</td>
<td>Rs.8347 crore</td>
</tr>
</tbody>
</table>

**SOURCE: REPORT OF NATIONAL MARITIME DEVELOPMENT PROGRAMME**

Till date 44 projects have been completed at a cost of Rs.4971.15 crores. In addition 69 schemes are at various stages of implementation.

Since evacuation of cargo is a major factor for the handling capacity of ports
and connectivity to hinterland is of utmost importance, the MOS has accepted the following recommendations of the Committee of Secretaries (COS):

- Major ports should preferably have a minimum four-lane road connectivity and double line rail connectivity
- Budgetary assistance, wherever required would be considered where the Internal Rate of Return (IRR) is less than the minimum prescribed requirement. This will be done through Viability Gap Funding.
- Connectivity would be established within a well defined time frame.
- All proposals for roads falling in the category of hinterland connectivity would be taken up by NHAI on BOT basis.

The work on the rail-road connectivity to the major ports is going on full-swing.

4.7 TARIFF REGULATION AT MAJOR PORTS

The Tariff Authority for Major Ports (TAMP) has been established for deciding the tariff structure for the ports for various cargoes. The TAMP has revised guidelines in 2005 which attempts to reduce cross subsidization to bring uniformity in Return on Capital Employed (ROCE) for ports and private terminals and concessional rates for encouraging coastal shipping superseding the earlier guidelines adopted in 1998. It has formulated normative tariff fixation for the ports.

A Committee under the Chairmanship of Additional Secretary & Financial Advisor, Ministry of Shipping was formed to examine the role of Tariff Authority for Major Ports (TAMP), Mumbai, vis-a-vis its performance regulation, the organizational structure and the statutory framework for the purpose of strengthening

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14 Section 47-A, The Major Port Trusts Act, (38 of 1963), pg-23
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of Tariff Authority for Major Ports. The Committee has finalized the draft Major
Ports Regulatory Authority Bill, 2009 and the same has been hosted on the website
for inviting comments/views of the various stakeholders on the proposed Act. The
Bill, if enacted by Parliament, will be a successor to the provisions currently
enshrined in the Major Port Trusts Act, 1963 in so far as the working of Tariff
Authority for Major Ports is concerned.

4.8 ELECTRONIC DATA EXCHANGE AND PORT COMMUNITY

To integrate all the Port Users in all the Major Ports through a common
interface a Port Community System (PCS) is being implemented in the major ports in
various phases for which budgetary assistance has also been provided to the extent of
Rs. Six crores and the rest would be contributed by the respective ports. The proposed
system which is under implementation envisages a centralized hub linking all Major
Ports of India and other stakeholders like Shipping Lines/Agents, Surveyors,
Stevedores, Banks, container Freight Stations, Government regulatory agencies,
Customs House agents, Importers, Exporters, etc in a secure manner.

4.9 FINANCING PLAN FOR PORTS

The quality of port infrastructure contributes directly to a country’s
international competitiveness and economic growth by facilitating the smooth
movement of cargo, spurring trade. In the past, port development had not kept pace
with the growth of the Indian economy, especially the quantum jump in cargo traffic
since 2002. As a result, several major ports are congested and offer inefficient
services. Compared to the actual traffic of 424 MMT at the Major Ports (Central
Government undertakings) in 2005-06, the projected traffic to be handled in the year
2011-12 would be 708 MMT.\textsuperscript{15} Keeping in view the need to provide for buffer capacity and seasonal variations, a capacity of 1,002 MMT would be required at Major Ports by 2011-12, as compared to the existing capacity of 456 MMT. A capacity addition of 546 MMT would, therefore, be required during the period 2006-07 to 2011-12. To ensure the requisite investments as well as time-bound creation of world-class facilities, the development of ports should be primarily through Public Private Partnerships (PPPs). Development of Major Ports would require an investment of Rs.57,452 crore between 2006-07 and 2011-12 while development of other ports (i.e. ports not owned by the Central Government) would require Rs.35,933 crore over the same period, aggregating to Rs.93,385 crore. Of this, an investment of approximately Rs.68,835 crore is envisaged from PPPs.

\subsection*{4.10 ROLE OF PORTS IN THE ECONOMIC DEVELOPMENT OF INDIA}

Ports play a vital role in the overall economic development of the country. About 95% by volume and 70% by value of the country’s international trade relies upon maritime transport. At present, there are 12 Major Ports, six each on the east and west coast and about 45 non-major and private ports contributing to maritime trade. The total volume of traffic handled by all Indian ports during 2005-06 was 573 MMT (Million Metric Tonnes) and the overall projected traffic for 2011-12 is 1009 MMT.\textsuperscript{16}

The traffic share of Major Ports in 2005-06 was 424 MMT and is expected to rise to 708 MMT in 2011-12. To cater to the additional capacity requirement, an investment of Rs.57,400 crore is envisaged in the Major Ports. To ensure holistic development, the Major Ports have identified development projects which can be broadly classified into the following major categories viz. (a) Construction/

\textsuperscript{15} http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx
\textsuperscript{16} http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx

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reconstruction of berths/jetties; (b) deepening of channels/berths; (c) procurement of equipment; and (d) others. The growth in cargo, which has been about 19% for the last two years, is likely to continue at this pace. Rate of growth in containers is likely to be in the region of 15% to 18%. With this growth rate, capacity at Indian ports, which is already under stress, requires substantial augmentation.

In the meeting of the Empowered Sub-committee held on May 17, 2006 under the chairmanship of Deputy Chairman, Planning Commission, it was decided that the financing plan for Major Ports would be formulated by a Task Force under the chairmanship of Shri Anwarul Hoda, Member, Planning.

Traffic projections

In 2004-05, the Department of Shipping carried out a detailed study of traffic patterns and trends in order to make traffic projections in the port sector in the context of National Maritime Development Programme. With a view to making macro level traffic projections for 2013-14 (both for Major and Non-Major Ports), these projections have been further updated in consultation with the User Ministries/Departments and the Major Ports. The broad commodity-wise projections for the years 2011-12 and 2013-14 are presented below:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Traffic projections (2011-12)</th>
<th>Traffic projections (2013-14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>POL (crude, products and LNG)</td>
<td>378 (14)</td>
<td>466 (20)</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>128 (14)</td>
<td>140 (20)</td>
</tr>
<tr>
<td>Coal</td>
<td>139 (14)</td>
<td>180 (20)</td>
</tr>
<tr>
<td>Container Tonnage (MTEUs)</td>
<td>170 (14)</td>
<td>241 (20)</td>
</tr>
<tr>
<td>Others*</td>
<td>194</td>
<td>198</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Total</td>
<td>1009</td>
<td>1225</td>
</tr>
</tbody>
</table>

(*) Includes iron & steel, fertilizers and their raw materials, food grains, alumina, chemicals and other miscellaneous and general cargo

SOURCE: REPORT OF NATIONAL MARITIME DEVELOPMENT PROGRAMME

GRAPH NO 4.6G

TRAFFIC PROJECTIONS OF MAJOR COMMODITIES IN 2011-12

(In Million Metric Tonnes)

- POL (crude products and LNG)
- Iron Ore
- Coal
- Container Tonnage (MTEUS)
- Others

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The above projections of 1009 MMT of total port traffic during 2011-12 have been compared with separate projections based on GDP growth that take account of the growth trend of port traffic during the previous 5 years. The two sets of projections are very close.

Based on the above projections, the Compound Annual Growth Rate (CAGR) of traffic between 2005-06 and 2011-12 is likely to be 9.83% for all ports, 8.94% for Major Ports and 12.16% for Non-Major ports.\textsuperscript{17}

Out of the total projected traffic of 1009 MMT, share of Major Ports will be 708 MMT\textsuperscript{18}. The projections of traffic at Major Ports have been arrived at on the basis of feedback received from individual Major Ports and various Government and user agencies based on current levels of demand, expansion plans, industrial growth, future export markets in the respective port’s hinterland etc.

\textsuperscript{17} http://www.valuenotes.com/valuenotes/research/cindarticles.asp?cap=5&cn=120&cn1=&cn2=&cn3=
\textsuperscript{18} http://www.indiastat.com/transport/30/shippingandports/253/stats.aspx
Capacity requirement

The existing capacity in the Major Ports is 456 MMT comprising 62 MMT (5.18 MTEUs or Million Twenty Feet Equivalent Units) for containers, 162 MMT for POL and 232 MMT for other cargo respectively. The projections relating to iron ore, however, may have to be reviewed in case the policy relating to export of iron ore is modified. It may be seen that the Major Ports would need to prepare themselves for handling total cargo traffic of 708 MMT by the year 2011-12\(^{19}\). Keeping in view the projected traffic and the need to provide for buffer capacity to meet the surge in requirements, as also the possibility of bunching of traffic, it is proposed to augment the capacity at Major Ports to a level of 1002 MMT which implies that an additional capacity of about 546 MMT is to be built in the period between 2006-07 and 2011-12. Commodity-wise break-up of additional capacity planned in the Major Ports is given in table below:

## TABLE NO.4.8

**COMMODITY-WISE BREAK-UP OF ADDITIONAL CAPACITY PLANNED IN MAJOR PORTS (In MMT)**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Existing capacity 2005-06</th>
<th>Projected traffic 2011-12</th>
<th>Planned capacity addition by 2011-12</th>
<th>Total capacity planned by 2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>POL</td>
<td>162</td>
<td>215</td>
<td>132</td>
<td>294</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>56</td>
<td>99</td>
<td>66</td>
<td>122</td>
</tr>
<tr>
<td>Coal</td>
<td>46</td>
<td>109</td>
<td>69</td>
<td>115</td>
</tr>
<tr>
<td>Container</td>
<td>62 (5.2)</td>
<td>144 (12)</td>
<td>161 (13.4)</td>
<td>224 (18.6)</td>
</tr>
<tr>
<td>Other cargos</td>
<td>130</td>
<td>141</td>
<td>118</td>
<td>247</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>456</strong></td>
<td><strong>708</strong></td>
<td><strong>546</strong></td>
<td><strong>1002</strong></td>
</tr>
</tbody>
</table>

**SOURCE:** REPORT OF NATIONAL MARITIME DEVELOPMENT PROGRAMME

India's port sector has reached a stage where the available capacity is facing saturation on account of growing traffic. This has resulted in congestion and delays. Owing to inefficiency and growing congestion, the average pre-berthing detention and the average turnaround time are high by international standards. The building of additional capacity is therefore, critical for rapid improvement in the sector.

**Source of financing**

Significant investments are required for upgradation and construction of berths; deepening of channels for improvement in drafts; and procurement, replacement and upgradation of equipment. The total investments in the Major Ports...
during the period 2007-12 are estimated at a level of Rs.57, 452 crore\(^\text{20}\). A summary of the funding pattern is given in table below:

### TABLE NO.4.9

**SUMMARY OF FUNDING PATTERN IN MAJOR PORTS**

Rs. in crores

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Investment</th>
<th>PPP</th>
<th>EBR</th>
<th>Internal resources</th>
<th>Govt. grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Berth development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Container terminal</td>
<td>11,502</td>
<td>10,958</td>
<td>0.0</td>
<td>544</td>
<td>0.0</td>
</tr>
<tr>
<td>1.2</td>
<td>POL berths</td>
<td>10,314</td>
<td>9,278</td>
<td>540</td>
<td>496</td>
<td>0.0</td>
</tr>
<tr>
<td>1.3</td>
<td>Other cargo berths</td>
<td>11,509</td>
<td>8,715</td>
<td>0.0</td>
<td>2,343</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total (I)</td>
<td>32,875</td>
<td>28,951</td>
<td>540</td>
<td>3,383</td>
<td>0.0</td>
</tr>
<tr>
<td>II</td>
<td>Capital dredging</td>
<td>5,812</td>
<td>103</td>
<td>866</td>
<td>2,275</td>
<td>2,568</td>
</tr>
<tr>
<td>III</td>
<td>Equipment</td>
<td>3,604</td>
<td>1,444</td>
<td>0.0</td>
<td>2,030</td>
<td>130</td>
</tr>
<tr>
<td>IV</td>
<td>Connectivity*</td>
<td>2,955</td>
<td>26</td>
<td>402</td>
<td>2,232</td>
<td>296</td>
</tr>
<tr>
<td></td>
<td>Others@</td>
<td>12,207</td>
<td>7,555</td>
<td>367</td>
<td>4,255</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total investment</td>
<td>57,452</td>
<td>38,079</td>
<td>2,174</td>
<td>14,175</td>
<td>3,024</td>
</tr>
</tbody>
</table>

**SOURCE:** REPORT OF NATIONAL MARITIME DEVELOPMENT PROGRAMME

The amount shown against connectivity projects indicates the amount committed by Port Trusts towards financing of the connectivity projects.

@ "Others" include a range of projects such as infrastructure within ports (roads, navigational aids, warehousing, stockyards, security works, etc.), ship/container repair facilities, locomotives, breakwaters, marinas, shipbuilding facilities, etc.

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Capacity addition through new projects would be at the level of 464 MMT, requiring a capital investment of Rs.32,875 crore. Additional capacity of 82 MMT would also be created through projects for dredging, equipment and other works aimed at improving productivity.

Public Private Partnership

Following the successful experience of operating berths at Major Ports on PPP basis and in order to maximize the inflow of private capital, all new berths taken up after June 30, 2006 at Major Ports will normally be constructed through the PPP mode. The likely investment from PPPs for construction of new berths would be Rs.38,079 crore.\(^1\)

Internal resources of Port Trusts

Some of the ports have sufficient funds of their own to meet the capital expenditure on dredging, replacement of equipments and other port-specific activities. It is estimated that investments of about Rs.14,175 crore can be funded through the internal resources of Port Trusts.

Borrowings

The shortfall between inflows from all sources and projected outflows is proposed to be met out of market borrowings. However, these borrowings would be capped by the ability of Port Trusts to repay. It is estimated that about Rs.2,174 crore can be raised through borrowings by Port Trusts. Where necessary, the feasibility of loans from one Port Trust to another would also be explored.

\(^1\) [http://economictimes.indiatimes.com/articleshow/6000105.cms](http://economictimes.indiatimes.com/articleshow/6000105.cms)
Viability gap in financing of PPPs

In taking a decision for development of selected berths on PPP basis, the possibilities of securing up to 20% of the capital costs by way of capital grant under the scheme for support to PPPs in infrastructure should be kept in view. This would help in expanding the scope of PPPs in development of the port sector.

Government grants

In select cases, where the financial position of any Major Port so warrants, Government support of capital dredging projects for deepening of port channels and construction of break waters has been proposed. Budgetary support of around Rs.3,024 crore has been projected for the Eleventh Five Year Plan. However, given the limitations on budgetary support, shortfalls may have to be met either by market borrowings or through inter-port loans on terms to be determined by the Government.

4.11 FUTURE SCENARIO OF INDIAN PORTS

The projected traffic to be handled at the Major Ports for container, POL and other cargos is 708 MMT for the year 2011-12. It is estimated that a capacity of 1,002 MMT would be required at Major Ports for handling the projected traffic. The existing capacity is 456 MMT and the traffic handled during the year 2005-06 was 424 MMT. A capacity addition of 546 MMT would, therefore, be required during the period 2006-07 to 2011-12 to handle the projected traffic.

Investment required

The projected investment in Major Ports for the period of 2006-07 to 2011-12 is summarized below:
TABLE NO 4.10

PROJECTED INVESTMENT IN MAJOR PORTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Investment (Rs.in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Terminals</td>
<td></td>
</tr>
<tr>
<td>(a) Container terminals</td>
<td>11,502</td>
</tr>
<tr>
<td>(b) POL terminals</td>
<td>10,314</td>
</tr>
<tr>
<td>(c) Other cargo terminals</td>
<td>11,059</td>
</tr>
<tr>
<td>Total (Terminals)</td>
<td>32,875</td>
</tr>
<tr>
<td>2 Capital dredging</td>
<td>5,812</td>
</tr>
<tr>
<td>3 Equipment</td>
<td>3,604</td>
</tr>
<tr>
<td>4 Connectivity projects</td>
<td>2,955</td>
</tr>
<tr>
<td>5 Others</td>
<td>12,207</td>
</tr>
<tr>
<td>Total</td>
<td>57,452</td>
</tr>
</tbody>
</table>

SOURCE: REPORT OF NATIONAL MARITIME DEVELOPMENT PROGRAMME

All concession/contracts would be awarded by the year 2011-12 though actual investment may spill over to 2013-14.

In addition to the investment in Major Ports, the Maritime States have projected a capacity addition of 346 MMT with an investment of Rs.35,933 crore that would be financed mainly through private capital. In their funding proposals, the States and Union Territories have projected inter alia a requirement of about Rs.3, 488 crore from the Central Government. Such assistance for Non-Major Ports should be possible to the extent States conform to the provisions of the viability gap funding scheme of Government of India.

22 http://economictimes.indiatimes.com/articleshow/4629097.cms
The total investment on Major and Non-Major Ports would be Rs.93,385 crore (say Rs.90,000 crore).

All new berths at Major Ports are to be constructed through the PPP mode after June 30, 2006. However, where operational exigencies so necessitate and/or balance of considerations on grounds of security, optimization of port revenues and any other relevant concerns so warrant, development of new berths may be taken up by the Major Ports through their own resources on a case by case approach with prior approval of the Ministry of Shipping in consultation with the Planning Commission. Port Trusts would also finance the investments required for upgrading their existing berths and for modernization/replacement of equipments.

The common user facilities like capital dredging, reclamation, bund construction, berth area development, electrification, water supply etc. would be taken up by the Port Trusts from their internal resources or through borrowings. The feasibility of PPPs in these areas would also be explored. In select cases, where the financial position of any Major Port so warrants, budgetary support for capital dredging projects and construction of breakwaters may be considered. Where budgetary support is inadequate, market borrowings may be relied upon the possibilities of inter-Port borrowings may also be explored.

Implementation and monitoring

An action plan for implementation of the various projects would be formulated by an IMG (Inter Ministerial Group) chaired by Secretary, Shipping and with Department of Economic Affairs, Planning Commission, Ministry of Coal, Ministry of Petroleum & Natural Gas and the respective Port Trusts as members, by July 2007 and submitted to Government Of India. The IMG would also review progress of implementation every month during 2007 and every quarter thereafter. The progress
of the implementation of the financing plan would be reported to the Committee on Infrastructure once every quarter

4.12 **Mumbai Port Trust**

*Mumbai Harbour* (aka Front Bay) is the southern portion of the Ulhas River estuary, the northern (and narrower) part of which is called Thane Creek. The historical island of Elephanta is one of the six islands that lie in the harbour. Jawaharlal Nehru Port and Navi Mumbai (New Bombay) lie to the east on the mainland, and the city of Mumbai (formerly Bombay) lies to the west on Salsette Island. The harbour opens to the Arabian Sea to the south.

![Mumbai Port Docks Diagram](image)

4.13 **History and Development**

In 1873, the present statutory autonomous Port Trust was set up for administering the affairs. It has been the gateway since the days the British established their factory in Mumbai. Over the years it is one of the important reasons for the development of trade and commerce in Mumbai. In 1736, Lovji Nusserwanjee Wadia began the Wadia shipbuilding dynasty when he obtained a contract from the British East India Company for building docks and ships in Bombay (present-day

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The first dry dock in Asia was built by the Wadias at Mumbai in 1750. By the 1840s the Wadia family had built over a hundred warships for the British and had trading networks around the world.

Bombay was making rapid progress in every possible direction. There was a need for a port in Bombay. Railway network with the interior had been opened up in 1853; the first cotton mill had commenced working in 1854 and six more mills were to be set up during the next five years. Steam coastal ferry services had started operations in 1866 and the most significant event of those times i.e. opening of Suez Canal to traffic in 1869 had revolutionized the maritime trade in Bombay and mainly converted her into the imperial port of India. Thus, Bombay became the Gateway to India.

The Bombay Port Trust Act, 1873 which was published on 20 June, 1873 provided for the creation of a corporation. The first meeting of the Board of Trustees was held on 3rd July, 1873 under the chairmanship of Col J A Ballard C.B.R.E. Mint Master, in the newly built Durbar Room of the Town hall.

The growth of Bombay port from 1885 onwards to 1945 saw many ups and downs. It took almost half a century for the port to outgrow its primitive state and blossom into a premier port of the country. Wars, a devastating famine in Bombay's hinterland, a plague and a general recession had their toll. But Bombay port survived all those natural calamities and man-made including a major explosion in the docks to emerge unscathed and rose to greater prosperity, becoming in the course of time, to be the port of call for several shipping lines in tune with increasing trade and commerce.

The opening the Suez Canal in 1869 revolutionized the maritime trade of Mumbai. It shifted the whole scenario of import and export trade from the East coast.
to the West and Mumbai Port became the principal Gateway of India. The first task which Bombay Port Trust faced after its constitution was the construction of works designed to meet the constantly expanding trade of the port. The Board focused its energies to the twin objects of providing modern wet dock accommodation for trade and shipping and the development of the Port Trust's estates as a means of building up its financial resources.

The first wet dock constructed in India was the Sassoon Dock at Mumbai in 1875 followed by the Prince’s and Victoria Docks in 1880 and 1888 respectively. The Alexandra Dock renamed Indira Dock in January 1972, the most modern of Mumbai’s docks, was constructed in 1904-1914.

Indira Dock was commissioned in 1914. It has an entrance lock, 228.6 meters long and 30.5 meters wide, through which vessels can enter or leave the dock at any state of tide. There are 21 berths inside the basin and 5 berths along the harbour wall. The draft inside the basin is around 9.1 meters. The depth of water inside the basin can be increased by 1.20 meters by impounding water. The draft at the harbour wall berths is around 7.0 meters.

To the south of Indira Dock, along the extended arm, there are two open berths, Ballard Pier and Ballard Pier Extension, each of 244 meters length with a draft of 9.1 meters and 9.75 meters, respectively. Ballard Pier Extension berth handles passenger vessels and is equipped with a modern passenger terminal building.

To handle petroleum products and liquid chemicals, a jetty was constructed at Pir Pau in 1923 and a new modern jetty capable of handling tankers of 47,000 tons Displacement was commissioned in December 1996. A modern oil terminal at Jawahar Dweep with three berths was constructed from 1952 to 1956 and the fourth oil berth capable of receiving tankers up to 1, 25,000 tons Displacement was
constructed between 1980-1984. There are 4 jetties at Jawahar Dweep, to handle crude and POL tankers and an offshore berth at Pir Pau to handle liquid chemicals and some of the POL traffic. Fourth jetty at Jawahar Dweep which was commissioned in 1984, can handle tankers with a maximum loaded draft of 12.20 meters and upto 1, 25,000 displacement tonnes. Two jetties can receive tankers up to 70,000 displacement tonnes. The New Pir Pau jetty commissioned in December 1996 can handle tankers of 47,000 dwt with a maximum loaded draft of 11.1 meters.

Mumbai is a natural harbour with three enclosed wet docks:

- Indira Docks
- Prince's Docks (built in the year 1885)
- Victoria Docks (built in the year 1891)

Crude and petroleum products are handled from four jetties at Jawahar Dweep, an island in the Mumbai harbour, and chemicals are handled from Pirpau. It can be noted that the port has existed for over 130 years.

Mumbai Port has carved an unique niche for itself in the Indian commercial geography. The port has completed 136 years of dedicated service to the nation. For decades, Mumbai Port remained India's premier port. Even today, with the development of other ports in the neighborhood, it caters to about 11 % of the total sea borne handled by Major Ports of the country in terms of volume. It handles about 20 % of POL traffic and 21 % of General traffic handled by Major Ports of India.

4.14 ADMINISTRATION

The Port of Mumbai is administered by a statutory autonomous corporation known as the Major Port Trust Act, 1963. The Chairman, Dy. Chairman and 19 other
Trustees, representing various interests connected with the port activities such as shippers, labour, state government etc. constitute the Board which looks after the administration of the port. The day to day activities are carried out by the Heads of departments under the supervision and control of the Chairman and Dy. Chairman. There are 16 departments which look after the day-to-day administration of the Port.

The activities in brief are as noted below:

**TABLE NO 4.11**

**DEPARTMENTS AND THEIR FUNCTIONS IN MUMBAI PORT TRUST**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Department</th>
<th>Responsible for</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manager</td>
<td>Administrative policy matters</td>
</tr>
<tr>
<td>2</td>
<td>Secretary</td>
<td>Convening of meetings of the Board and Standing Committees</td>
</tr>
<tr>
<td>3</td>
<td>Chief Personnel &amp; Industrial Relations Manager</td>
<td>Matters pertaining to industrial relations</td>
</tr>
<tr>
<td>4</td>
<td>Accounts</td>
<td>Accounts and finance</td>
</tr>
<tr>
<td>5</td>
<td>Civil Engineering</td>
<td>All civil engineering works</td>
</tr>
<tr>
<td>6</td>
<td>Mechanical Engineering</td>
<td>Mechanical &amp; electrical works</td>
</tr>
<tr>
<td>7</td>
<td>Traffic</td>
<td>Dock and railway</td>
</tr>
<tr>
<td>8</td>
<td>Port</td>
<td>Marine operations</td>
</tr>
<tr>
<td>9</td>
<td>Stores</td>
<td>Purchase of stores</td>
</tr>
<tr>
<td>10</td>
<td>Estate</td>
<td>Management of Port estate</td>
</tr>
<tr>
<td>11</td>
<td>Medical</td>
<td>Management of Hospital and Medical Care of Port employees</td>
</tr>
<tr>
<td>12</td>
<td>Labour</td>
<td>Staff welfare and dock safety</td>
</tr>
<tr>
<td>13</td>
<td>Planning &amp; Research</td>
<td>Maintenance of port statistics, carrying out research and investigations on problems relating to port</td>
</tr>
<tr>
<td>14</td>
<td>Vigilance</td>
<td>Vigilance matters</td>
</tr>
<tr>
<td>15</td>
<td>Legal</td>
<td>Advice on legal matters, filing of suits etc.</td>
</tr>
</tbody>
</table>

**SOURCE:** ORGANISATION MANUAL, MUMBAI PORT TRUST
With the help of the following figure, we get information about Mumbai Port Trust’s organization structure.

**CHART NO.4.1C**

**ORGANISATION STRUCTURE OF MUMBAI PORT TRUST**

**BOARD OF TRUSTEES AND CONSERVATOR OF PORT**

**CHAIRMAN OF THE BOARD AND CHIEF EXECUTIVE**

**DEPUTY CHAIRMAN**

**GENERAL ADMINISTRATION**

- **Secretary**
  - Board and Committee meetings & coordination Public Relations

- **Financial Adviser & Chief Account Officer**
  - Port, Finance, Accounts, Internal Audit, Investment & Establishment

- **Estate Manager**
  - Management of Estate (Except Docks and Open areas)

- **Manager (Services and O&M)**
  - Personal Matters, Watch & Ward of Docks & Hospital, Inhouse Training, Hindi implementation and SC/ST Liaison

- **Chief Law Officer & Advocate**
  - Legal Matters and Filing of Suits

- **Chief Personnel & Industrial Relations Officer**
  - Industrial Relations

- **Chief Vigilance Officer**
  - Co-ordination of Formulation & Monitoring of Plan Schemes, Statistical Analysis & Investigation, Providing Computer & Telecom facilities

**OPERATIONAL**

- **Traffic Manager**
  - Allocation of berths, Labour, Equipments, Taking charge of Storage and Delivery of goods and Docks Sanitation

- **Railway Manager**
  - Transportation and Commercial work of Port Railway

- **Deputy Conservator**
  - Maintenance of Harbour, Regulation of Navigation, Harbour Communication, Pilotage, Tonnage & Dredging

**ONLINE SERVICE**

- **Civil Engineer**
  - Civil Engineering Works, Marine Survey and Salvage

- **Chief Mechanical Engineer**
  - Mechanical, Electrical and Marine works

- **Materials Manager**
  - Purchase, Inspection, Storage and Distribution of Stores

**WELFARE**

- **Chief Medical Officer**
  - Medical Attendance and Indoor/Outdoor Treatment to employees and their Family.

- **Chief Welfare Officer**
  - Welfare and Dock Safety

**SOURCE:** ORGANISATION CHART, MUMBAI PORT TRUST
DEVELOPMENT OF MUMBAI PORT DURING THE FIVE YEAR PLANS

The principle object of the first two plans was to rehabilitate the damages suffered by the port from wars and provide for the maintenance and effective functioning of the existing facilities. For improving the capacity of port, the following measures were undertaken:

1. Construction of a new Marine Oil Terminal in the natural deep waters of Butcher Island, consequent on the setting up of the two oil refineries at Trombay. This terminal comprising three berths capable of receiving large oil tankers is equipped with all modern facilities for speedy discharge and loading of oil and is connected to the refineries by network of pipelines.

2. Provision of new and large transit sheds in place of those destroyed in the explosion of 1944 and an uncleared goods warehouse and buffer sites for spillover of uncleared cargo.

3. Progressive replacement of the 50 year old Hydraulic Wharf Cranes in the Indira dock by modern electric wharf cranes of higher handling capacity and greater speed.

The Third plan aimed at relieving chronic congestion in the dock by adding fresh capacities. The highlight of the Third five plan were the execution of Dock Expansion Scheme, Construction of Ballard Pier Extension berth and New Ferry Wharf off Prince’s Dock. The main features of these schemes are:

- Additional berth at Ballard Pier equipped with a modern passenger terminal building.
- Addition of 31,000 sq. meters of reclaimed area to the Estate.
- Provision of 16,072 sq. meters of covered storage space in five transit sheds.
- Two repair berths for coastal vessels
• A new Ferry Wharf off Prince’s Dock for Coastal Passenger Vessels.  

Most of works under the above schemes were completed by 1969.

The Fourth, the Fifth and the subsequent two Annual Plans mainly aimed at modernization of existing facilities. During the period, no major development schemes were undertaken by the Port barring the construction of the Fourth Oil Berth at Jawahar Dweep. The spill-over schemes of the previous plan, were perused and three berths at Marine Oil Terminal were upgraded to receive tankers of 70,000 displacement tons.

The Sixth Five Year Plan period saw the port laying greater emphasis on provision of Container handling facilities, modernization of Flotilla and completion of schemes undertaken during the Fifth Five Year Plan. The following important new schemes were undertaken:

• Development of a Container Terminal at Ballard Pier Station berth and No. 1, Indira Dock.

• Installation of computer system to be used for various port operations including container handling.

• Purchase of 3 Rubber Tyre mounted Quay side Gantry cranes for handling containers.

• Purchase of 7 mobile cranes for shed management.

• Setting up of Training Institute for port workers.
The Seventh Five Year Plan of the port laid emphasis on modernization of handling systems and provision of container handling facilities. The important new schemes undertaken by the port include:

- Purchase of one new Grab Dredger
- Construction of quarters and provision of welfare facilities.
- Provision of container handling facilities
- Improvement of telecommunication system at MOT, Jawahar Dweep, Docks and Administrative Offices.
- Improvement of oil handling facilities at Jawahar Dweep.
- Measures to prevent oil pollution with skimmer facilities.
- Modernisation of existing docks.
- Procurement of modern medical equipment for Port Trust Hospital.
- Construction of warehouse at Haji Bunder Dump and at Wadala Incinerator plot.

Schemes included in the Eighth five year plan mainly related to replacement, renewal, modernization of port facilities, schemes which will help in increasing operational efficiency and welfare schemes. Some of the important ones are as under:

- Modernisation of wharf facilities with replacement of wharf cranes of higher lifting capacity.
- Replacement of submarine pipelines between Pir Pau and Jawahar Dweep.
- Replacement of outer lock gate at Indira dock.
- Provision of computer based management information system.
Some of major schemes include in the Ninth Five Year plan with an approved outlay of Rs.1208 crore are under:

- Modernisation of jetties 1, 2, 3 at Jawahar Dweep
- Replacement of common users pipeline.
- Revamping of Railway system.
- Construction of a second berth off New Pir Pau Pier for liquid chemicals/specialized grades of POL.
- Replacement of old outdated harbour tugs, dock tugs dredgers and cargo handling equipments by modern ones of higher capacity.
- Development of Dock Complex at Gamadia Road.

The Port initially formulated the Tenth Five Year Plan with a proposed outlay of Rs.880.20 crore. Some of the major schemes included in the Tenth five Year Plan are:

- Construction of deep-drafted offshore berths for handling of containers.
- Upgradation of MbPT Railway.
- Replacement of Storm
- Modernisation of Jetties at JD 1, 2 and 3.
- Replacement of one Caisson Gate at Hughes Dry Dock.
- Replacement of Common User Pipeline from PP to Wadala
- Construction of second liquid chemical berth.
4.16 PORT INFRASTRUCTURE

Berths:

Prince's dock is the oldest one, commissioned in 1880. It has 8 berths, each with a designed draft of 6.4 meters.

The Victoria dock, commissioned in 1888. it has 14 berths each with a designed draft of 6.7 meters.

Indira Dock commissioned in 1914. It has an entrance lock, 228.6 meters long and 30.5 meters wide. There are 21 berths inside the basin and 5 berths along the harbour wall.

To the south of Indira Dock, along the extended arm, there are two open berths, Ballard Pier and Ballard Pier Extension, each of 244 meters length with a draft of 9.1 meters and 0.7 meters respectively. Ballard Pier Extension berth handles passenger vessels and is equipped with a modern passenger terminal building.

Container facilities:

A full-fledged container terminal has set up at BPS (Ballard Pier Station) in Indira Dock which is equipped with two Gantry Cranes for ship to shore handling of containers and three Rubber Tyred Gantry cranes for yard operations. 516 ground slots are available for temporary stacking of containers prior to their shipment or removal to CFS. Berths Nos. 1 to 5 in

Indira Dock have been earmarked for handling container vessels and stack yard with over 1600 slots in the backup space behind these berths have been developed for temporary stacking of containers. Container Freight Stations have been set up at Manganese Ore Depot, Timber Pond, Wadala Incinerator Plot and Frere Basin. 132 reefer points at selected berths/ CFS have been provided for refrigerated

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cargo. Rail Container Depot has been developed Cotton Depot to facilitate smooth movement of ICD traffic.

**Cargo handling equipments:**

The docks are equipped with electric wharf side cranes, container handling cranes, floating cranes and mobile cargo handling equipments.

**TABLE NO.4.12**

**CARGO HANDLING EQUIPMENTS IN MUMBAI PORT TRUST**

<table>
<thead>
<tr>
<th>Name of equipment</th>
<th>Number of equipments</th>
<th>Capacity of equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel locomotives</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mobile Cranes</td>
<td>6</td>
<td>14 tonnes each</td>
</tr>
<tr>
<td>Tower Cranes</td>
<td>2</td>
<td>20 tonnes each</td>
</tr>
<tr>
<td>Forklifts –Diesel</td>
<td>30</td>
<td>3 tonnes each</td>
</tr>
<tr>
<td>Electrical Wharf luffing cranes</td>
<td>29</td>
<td>3/6/10 tonnes</td>
</tr>
<tr>
<td>Electrical Wharf luffing cranes</td>
<td>4</td>
<td>13 tonnes</td>
</tr>
<tr>
<td>Reach stackers</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Tractors</td>
<td>5</td>
<td>6000 lbs draw pull</td>
</tr>
<tr>
<td>Yard Gantry Cranes</td>
<td>3</td>
<td>35.5 tonnes each</td>
</tr>
<tr>
<td>Quayside Gantry Cranes</td>
<td>1</td>
<td>35.5 tonnes each</td>
</tr>
</tbody>
</table>

**SOURCE:** MUMBAI PORT TRUST ADMINISTRATION REPORT 2008-09.(PAGE NO.50)

**Ferry wharf:**

The ferry wharf, near Prince’s dock, comprises four berths for handling ferry ships carrying coastal passengers. It can also accommodate launches plying across the harbour.
Port Trust Railway:

The port owns and operates its own Railway which is connected to the broad gauge main lines of Central and Western Railways at its Interchange Railway Yard at Wadala. The railway runs for about 10 kms. of straight route between Ballard Pier and Wadala about 100 kms. It serves the docks as well as the important installations and factories on the Port Trust estate. Port has its fleet of 5 diesel locomotives. The Railway handled around 0.823 million tones of traffic during 2003-2004.

For handling ICD traffic, a full fledge Rail Container Depot has been set up at Cotton Depot with facilities for reception, stacking etc. of containers. It can handle two trains of 45 wagons with double discharge facilities.

Dry dock:

There are two dry docks namely Merewether Dry Dock of 152.40 meters and Hughes Dry of 304.04 meters in length respectively. The Hughes Dry Docks pumps have been electrified and are used also for impounding water to an extra height of 1.20 meters. So that the depth of water at all berths inside Indira dock can be increased from 9.30 meters to 10.50 meters. During fair weather seasons, the depth of water level can be increased even up to 11.50 meters. One compressed Air Plant is installed at MDD pumping station which provides compressed air to the vessels in the Dry Dock.

Storage Accommodation:

Mumbai Port has approximately 7 lakh square meters of open and covered storage accommodation for storing unclear, confiscated good and hazardous Cargo. Pro-shipment facilities are also available for export cargo at the port.

Fish Harbour:

Fish handling facilities are provided at Sassoon Dock and near Malet Basin.
Anchorage

There are 63 anchorage points.

Pilotage

Pilotage in and out of the harbour is compulsory for ships of 100 tons net and upwards. The pilotage limits outward being delimited by a line drawn East-West through the Prongs Lighthouse.

Berth details

There are in all 21 berths at Indira docks for handling containers, Bulk cargo, oil products and multipurpose. Jawahar Dweep has exclusive four berths which handle only crude and other oil products. Mumbai Port has exclusive passenger berth at Ballard Pier Extension for handling cruise vessels.

Besides the wet docks, there are, along the harbour front, a number of ‘Bunders’ which are open wharves and basins where the traffic carried by the sailing vessels is handled. These bunders have extensive facilities for loading, unloading and storing the cargo and have an aggregate quay age of 12,500 meters.

Storage facilities

Extensive facilities are available for storage of cargo in the docks and outlaying areas. The new sheds have been designed on modern lines with a steel frame and wall of pre-cast concrete blocks. The column spacing has been kept wide...
enough to allow the use of mobile cranes, forklifts and other cargo handling equipments.

Warehousing accommodation is available for storage of goods which are in the process of despatch either within Mumbai and its suburbs or to the hinterland of the Port. Pre-shipment storage facilities have been accorded to all types of export cargoes such as sugar, oil cakes, iron and steel etc.

**Dry Docks**

The existing facilities provide all major services for repairs to the ships. There are two dry docks - Merewether in the Prince's Dock and Hughes in the Indira Dock. The Hughes Dry Docks pumps have been electrified and are used also for impounding water to an extra height of 1.20 m so that the depth of water at all berths inside Indira dock can be increased from 9.30 m to 10.50 m.

During fair weather seasons the depth of water level can be increased even up to 11.50 m. At Hughes Dry Dock 24 welding plants of 415 V - 80 V - 300 A capacity and 8 Oxy-Acetylene outlets have been provided. There are 12 welding plants of 415 V - 80 V - 300 A capacity. One Compressed Air Plant is installed at MDD pumping station which provides compressed air to the vessels in the Dry Dock.
Road

The entire Port area is served by an extensive network of roads of over 126 kilometers.

Port Railway

The Port of Mumbai owns and operates its own Railway which is connected to the broad gauge main lines of the Central and Western Railway at its Interchange Railway Yard at Wadala. The Railway runs about 10 kilometers of straight route between Ballard Pier and Wadala and has an extensive network of track of about 100 kilometers. It serves the Docks as well as the important installations and factories on the Port Trust estates. It has its own fleet of 5 diesel locomotives.

For handling ICD traffic a full fledged RCD has been set up at Cotton Depot with facilities for reception, stacking etc. of containers. It can handle two trains of 45 wagons with double despatch facilities.

4.18 FUTURE PROJECTS AND DEVELOPMENT OF MUMBAI PORT TRUST

The Mumbai Port continues to be the number one port of the region handling diverse types of cargoes: from containers to over-dimensional project cargoes to automobiles to break-bulk to liquid bulk. It is number one Major Port in oil handling, motor vehicles, offshore supply base, break-bulk, and project cargo and passenger traffic. India is undoubtedly one of the world's fastest growing economies, registering around 8% annual growth during the new millennium. The Indian economy has
displayed maturity and resilience in the face of various emerging challenges demonstrating the robust fundamentals underlying the growth momentum that we have seen the recent years. It has been rightly noted by policy makers that, if the country has to justify its status as an economic powerhouse, India has to get its maritime infrastructure in place. This is a formidable challenge.

To effectively service the country's burgeoning EXIM trade, the Major Ports have to double their capacities, created over the last 60 years, by 2011-12, the last year of the Eleventh Five Year Plan. In line with this initiative, the Mumbai Port has embarked on a massive plan to enhance its capacity in all the different segments of its operations: containers, break-bulk, liquid chemical and POL. The port is developing Off Shore Container Terminal Project on BOT basis. The concession agreement for the project has been signed with Indira Container Terminal Pvt. Ltd., a consortium of Gammon India Ltd. and Dragados SPL, on 3.12.2007. This project would facilitate handling of container vessels with draft up to 14.5 meters and an additional capacity of 9.0 million tones would be created under 1st phase, to be commissioned by December 2010.

The project for Redevelopment of Harbour Wall Berths involves strengthening and deepening of the berth pockets up to 14.5 meter from the present level of 8.5 meters and would enable the port to handle deep drafted and over dimensional vessels. This project is being executed by the Port on its own and would increase the port capacity by 7 million tones, from the present capacity of one million tones to 8 million tones. The port is also in the process of constructing the second chemical jetty, with a capacity of 2 million tonnes. All the requisite approvals for these projects have already been received and are in various stages of execution.

Further, the Consultant's appointed by the Port has already prepared a Detailed Project Report for development of 5th Oil Berth at Jawahar Dweep to handle crude
carriers of around 1,50,000 DWT. These capacity expansion programmes have taken into account the requirements of the city and its immediate hinterland. It has also taken note of the possible bottlenecks in cargo evacuation. To facilitate smooth evacuation, the Port has agreed to bear the entire cost of laying the Wadala-Kurla freight line, outside the Port areas, which would also ease the suburban traffic. The Port has also agreed to part fund the Anik-Panjapur Link Road as well as the road to Wadala Truck Terminus through the salt pan land, besides allowing the Eastern Free Way and the Sewri-Nhava Trans-Harbour Link to pass through the Port's precious landed estates. Considering the vast spin-off benefits that the cruise tourism bestows on the city of Mumbai and the State of Maharashtra, over the last couple of years, the Port has taken various initiatives. To facilitate home-porting of cruise vessels and to further promoting cruise tourism, a world class cruise terminal has been planned, outside the cargo port, with Marina, Convention Center, Conference Hall, Shopping Mall, Car parking area and other facilities. The detailed project report of the proposed cruise terminal is ready.

The project will be implemented after detailed deliberations with other stakeholders, on Public Private Participation basis. Undoubtedly, this is going to be a huge value addition to the city. Majority of the computerized sub-systems relating to diverse port operations has been integrated enabling easier tracking of vessels, containers and cargo, speeded up vessel and cargo billing. The port is gearing up for implementation of Electronic Data Interchange, connecting all the stake-holders, through Port Community System being implemented at all the Major Ports of the country. The finalization of the proposal for replacement of the existing Vessel Traffic Management System with a new state of the art system is in the advanced stage.
Though the Port’s performance and success has continued over the years, it still has many challenges to overcome. Keeping in view the future requirements of the Mumbai region as also the planned capacity creation envisaged in the region, the Mumbai Port's capacity needs to be enhanced to avoid a situation of infrastructure deficit or imbalance in the region. Mumbai Port’s endeavor is to cross future milestones and keep surging ahead in the years to come, with a view to ensure that the trade and industry of the Region do not suffer for want of quality port infrastructure.

4.19 MAJOR PROJECTS OF MUMBAI PORT IN THE NEAR FUTURE.

BOX NO 4.1

MAJOR PROJECTS OF MUMBAI PORT

- Deepening of channel and improvement of infrastructure of 18 to 21 harbour wall berths at Indira Dock
- Construction of 2nd Chemical Berth off Pir Pau
- Construction of two offshore container terminals

1. Deepening of channel and improvement of infrastructure of 18 to 21 harbour wall berths at Indira Dock

The project at an estimated cost of Rs. 353 crore was approved by Govt. of India in December, 2007. Ms Howe India has been appointed as the Project Management Consultant and the dredging component is likely to be

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awarded in December, 2009. The project is expected to be completed by March, 2010 and on completion is expected to add a capacity of 8 MTP A and also enable the Port to handle larger vessels of 35000 DWT capacity. In 2009-10 an amount of Rs. 10 crore has been kept for the scheme.

2. Construction of 2nd Chemical Berth off Pir Pau

This project at an estimated cost of Rs. 116 crore was approved by Govt. of India in November, 2007. MIs Royale Haskoning India has been appointed as the Project Management Consultant and the tenders for the dredging work have been invited in January, 2008. The project is expected to be completed by March 2010 and is expected to add a capacity of 2 MTP A and will also enable the Port to handle large vessels up to 37,000 DWT. In 2009-10 an amount of Rs. 20 crore has been kept for the scheme.

3. Construction of two offshore container terminals

The construction of this terminal at an estimated cost of Rs.1460 crore (revised) is being taken up on BOT basis. The Concession Agreement has been signed by Mumbai Port with the BOT Operator on 3rd December, 2007. The approval for the components of the work such as dredging etc. to be carried out by Mumbai Port at an estimated cost of Rs.445 crore has been approved by Govt. of India. Project Management Consultant has been appointed and the dredging work is in progress, it is likely to be completed by March, 2010. The project is expected to be completed by December, 2010 and the capacity of 9.6 MTPA will be added.

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In line with the decision of Committee on Infrastructure, the 12 Major Ports have taken up the formulation of Business Plan that would facilitate the transformation of these ports into world-class facilities suited to the requirements of the future economy of India. The then Ministry of Shipping, Road Transport and Highways (MOSRTH), has mandated that each of the twelve major ports develop a Business Plan that

- States a long term vision for the port that builds on its core strengths
- Establishes the goals to be achieved over the next seven years to satisfy this vision
- Describes the strategy to be followed to achieve these goals. Provides a detailed plan of action to implement the strategy
- Identifies sources of financing for all proposed investments

The Business Plan would provide the foundation for an annual planning process within the Port and to regularly adjust the Plan to changing circumstances. Implementation of the Plan is to be financed through private sector participation and extra Budgetary resources and also in select cases through Budgetary Support from the Government, apart from Port's internal resources. Accordingly, Perspective Plans of Major Ports have been prepared consisting of long term plan for 20 years and short term plan for 7 years.

Accordingly all the Major Ports have appointed Consultants for preparation of Business Plans. The Indian Ports Association has appointed the Port of Rotterdam Authority as Advisor to co-ordinate the preparation of Business Plans by the Major
Ports. The Advisor has to prepare a consolidated Port Development Plan for the Indian Ports based on the Final Reports of the Consultants, in which particular attention is to be paid to potential future competition among the Indian Ports. All the Consultants have submitted the final Reports and the entire exercise were expected to be completed by March, 2007. Afterwards, the Advisor presented the main conclusions and recommendations of the Consolidated Port Development Plan. The Advisor prepared the Consolidated Port Development Plan based on the Perspective plans prepared by the Consultants of Major Ports. The Advisor has subsequently submitted the Consolidated Port Development Plan.

In conclusion, though Mumbai Port trust is a very old port, its infrastructure and facilities available for EXIM trade are exemplary. Mumbai port is handling 10% of the major ports trade in India. There are various future projects in the pipeline which will augment its capacity and performance. These projects will enable Mumbai port to scale newer heights both in terms of volume as well as productivity. However, it is important for the port to have an effective cost system to arrive at the correct cost of various services rendered by the port. Proper cost ascertainment will enable Mumbai port to fix appropriate pricing strategy for maximization of profit. With this in view, the existing cost system of Mumbai port trust has been thoroughly analysed in the next chapter in order to determine the validity of the present cost system in the changing scenario of Mumbai port trust.