

# SWOT Analysis of Chennai Port (An ISO 14001: 2004 Certified Port)

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## Abstract

Chennai Port established in 1639, is the gateway port of India's eastern coast and is the 2nd largest port in terms of cargo handled. It has a channel length of 7 kilometres, harbour length of 5.5 kilometres, and advantage of having a deep draft of upto 16 meters allowing it to handle large vessels. The Port handles a variety of cargo including containers, automobile exports, POL, coal, fertilizers and general cargo items. It has infrastructure facilities of container terminal, oil terminals, RORO terminal and bulk container handling terminal for handling a variety of cargo. The Port has a large hinterland consisting of the states of Tamil Nadu, Andhra Pradesh, Karnataka and Pondicherry. The Port has very good opportunities due to India's growing international trade and the large hinterland serviced by it. The government of India plans to develop Chennai Port for a greater role in India's Maritime trade and towards this purpose the SWOT analysis has been carried out.

## Introduction

### Background of the Study

Maritime trade started way back in 1639 on the sea shore of Chennai. It was at that time only a stretch of sandy coastline. It was in 1861 that piers were built in the port but subsequent storms damaged these piers. Therefore an artificial harbour was built and the operations were started in 1881. The cargo operations were carried out on the northern pier, located on the north-eastern side of Fort St. George in Chennai. During the first couple of years, the port registered traffic of 3 lakh tonnes of cargo handled through 600 ships. The port was an artificial harbour and was vulnerable to cyclones and accumulation of sand brought in by the natural currents. This sand accumulation reduced the draft of the port and therefore reduced the opportunity for bigger vessels to visit the port. Sir Francis Spring a visionary first made the plans for development of the port in a scientific manner so as to overcome the man-made and natural challenges. The ports entrance was shifted from the eastern side to the North Eastern side to protect the port from natural vulnerabilities. By 1920 the port had four quays along with the transit-sheds, warehouses and a big marshalling yard to facilitate the transfer of cargo from land to sea and vice versa. Chennai Port is the third oldest port among the 13 major ports in India, and 2nd largest Port in India in terms of cargo handled. It achieved the milestone of handling 50 Million tonnes of cargo in March 2007 itself and also is an emerging hub port

on the East Coast of India.

The total quay length available is around 5.5 km. The port has three Docks, 24 berths and a draft ranging from 12 meters to 16.5 meters and has become a hub port for Containers, Cars and Project Cargo in the East Coast. The long term plan for Chennai Port envisages that the Port will mainly handle 4C's i.e. Containers, Cars, Cruise and Clean Cargo.

Chennai Port was the first port to start container handling operations in 1983 which were handed over to CCTL (Chennai Container Terminal Ltd.) in 2001 for operating under BOT basis. A second container terminal has recently been awarded to PSA SICAL at Ambedkar dock recently to augment the container operations. PSA's Chennai International Terminals Pvt. Ltd. is the latest and newer Container Terminal in Chennai Port and is ideally positioned to tap the high growth Chennai region. It serves an ever growing hinterland and caters to the fast growing automobile, pharmaceuticals, textile, leather, light engineering and chemical manufacturing units. The terminal is designed to accommodate and cater to the new generation of deep-draft container vessels. Having the capability of handling fourth generation vessels, the terminal is ranked in the top 100 container ports in the world. Witnessing a phenomenal growth in container handling year after year the port is added with the Second Container Terminal with a capacity to handle 1.5 M TEUs to meet the

demand. The terminal's connectivity to Inland Container Depot (ICD) destinations is enhanced by its own seamless rail connection. It is ideally positioned to serve the growing Rail Container Traffic generated by Rail logistic operators. PSA's Chennai International Terminals Pvt Ltd is a 100% subsidiary of PSA International of Singapore. PSA International is one of the leading global port groups. PSA participates in port projects across Asia, Europe and the Americas with flagship operations in PSA Singapore Terminals and PSA Antwerp. Employing the finest talents in

the industry, PSA delivers reliable and best-in-class service to its customers and develops win-win relationships with its partners. As the port operator of choice in the world's gateway hubs, PSA is "The World's Port of Call". PSA International has been voted "Best Global Container Terminal Operating Company" at the Asian Freight & Supply Chain Awards.



### Strengths of the Chennai Port

- Chennai Port is considered as one of the preferred Ports for trade, due to its location, proximity to industries, competitive pricing, and safe and secure operations.
- There is 7.0 km of entrance channel with the depth of outer channel being 19.2 m and that of the inner channel being 18.6 m. The Port has a total land area of 240 ha (approx.).
- The planned terminal capacity is 1.50 Million TEUs. PSA International is one of the leading global port groups.
- Master plan has been prepared for Port Railway, Realigning Rail and Road network.
- Dedicated Elevated Expressway from Chennai Port to Maduravoyal up to NH4 has been approved by the Government to enhance the hinterland connectivity.
- Development of Ro-Ro Terminal and a Multi level car

parking facility with a capacity of 5000 cars. Chennai Mega Container Terminal with a continuous quay length of 2 km with 18-22m draft.

- Capable of handling ultra large container ships carrying over 15000 TEU's.
- The break water extension from existing outer arm will be utilized to develop deep draft oil berth for handling VLCCs.

### Geographical Location

- Latitude: 13° 06' N;
- Longitude: 80° 18' E;
- Climate: Tropical;
- Time: +5 Hrs. 30 Minutes;
- Temperature: 30°C Max. 18°C Min.;
- Annual Rainfall: 125 Cms.;

- Spring Tides: 1.2 Metres;
- Water Area: 420.00 acres

#### **Land Area: 586.96 acres**

- Navigation Channel (Entrance Channel)
- Soil: Predominantly sandy and silt;
- Length of Channel: About 7 kilometres;
- Depth of Inner Channel: 18.6m at chart datum;
- Depth of Outer Channel: 19.2m at chart datum;
- S w e l l A l l o w a n c e : 3 . 0 0 M e t r e s ;
- Width of Channel: The width of channel gradually increases from 244m to 410m at the bent portion and then maintains a constant width of 305m;

#### **Total Length of Breakwater**

- Inner Harbour
- Eastern Breakwater: 1325m;
- Northern Breakwater: 575m;
- Outer Harbour
- Eastern Breakwater: 590m;
- Northern Breakwater: 460m;
- Outer Arm: 1000m;
- Upper Pitch Revetment: 950m;
- Port Entrances
- Entrance in Bharathi Dock: 350m;
- Entrance in Dr. Ambedkar Dock: 125m;
- Storage Facilities
- Transit Shed/over flow shed: 7 Nos. – 30,693 sq.mts;  
Warehouse: 5 Nos. - 30,138 sq.mts.
- Container Freight Station: 3 Nos. - 40,644 sq.mts;
- Open space: 3,84,611 sq.mts;
- Container parking Yard: 2,50,600 sq.mts.

#### **Facilities at Port**

##### **Oil Terminals (BD1 & BD3)**

- First Oil berth at Bharathi Dock-I commissioned in 1972 can handle tankers up to 100,000 DWT.
- Second Oil Berth at Bharathi Dock-III commissioned in 1986 can handle tankers up to 140,000 DWT

- Maximum LOA of Tankers Berthed at BD -I & BD - III - 280.4m (920 ft).
- Minimum LOA of the ship so far Berthed at BD - I - 108.15m.
- Minimum LOA of the ships berthed at BD - III - 149M. or 488 ft.
- Capacity - 13 Million Tonnes Per Annum
- Installed with 5 Marine Loading Arms at BD - I and 6 Marine Loading Arms at BD - III. Berths laid with 762 mm (30") dia pipelines for conveying Crude, 500 mm (20") dia pipeline for conveying White Oil Product and 350 mm (14") dia pipelines for conveying Furnace Oil.
- Separate Pipelines for Crude, Furnace Oil, White Oil Products, Deballasting, Tower Monitor, Fire Hydrant and Fresh Water
- Service Lines for LDO Bunker, Furnace Oil Bunker and Lubricant Oil Bunker
- The facilities include pumping at the rate of 3000 Tonnes per hour for Crude oil and 1000 Tonnes per hour for Petroleum Products.
- Provision of Oil reception facilities in accordance with MARPOL convention for receiving oily ballast, sludge and slop.
- Both the jetties are equipped with fire monitors
- There is a separate fire fighting pump house with diesel and electrically driven pumps to supply fire hydrant and tower monitors.

##### **Iron ORE Terminal (BD2)**

- Mechanised Ore handling Plant commissioned in 1977 at Bharathi Dock-II
- Can handle Ore carriers of maximum size 1,45,000 DWT and LOA of 280.4 metres
- Capacity - 8 Million Tonnes Per Annum
- Loading rate - 6000 Tonnes per hour
- Capable of receiving, stockpiling, reclaiming, weighing, sampling and ship loading
- Ore handling facilities consists of two rotary wagon tippers, ten lines of conveyors, two rail-mounted stackers, two rail-mounted bucket-wheel reclaimers and two rail-mounted ship loaders.
- Equipped with automatic belt weigher, sampling facilities, self-contained maintenance workshop and a service station
- Separate receiving line and shipping line, which can also

- function as interconnected system
- Availability of two control rooms for the automatic operation of various equipment and conveyors.
- Well connected rail lines
- Back-up of 33 KV receiving sub-station
- Ore Stock Yard - Capacity - 6.4 Lakh tonnes
- Rotary Wagon Tippler can handle 1200 MT/hr at the rate of 20 wagons per hour
- Receiving Conveyors (4 Nos.) can handle 1500 MT/hr/stream of two conveyors.
- Shipping Conveyors (6 Nos.) can handle 4000 MT/hr/stream of three conveyors.
- Rated capacity of Stackers - 1500 MT/hr each
- Rated capacity of the Reclaimer - 3000 MT/hr each
- Rated capacity of Ship loaders - 3000 MT/hr each

#### **Container Terminals**

- Container Terminal -1 (CTB 1, CTB 2, CTB 3, CTB 4) CCTPL :- Quay Length - 885m, Depth - 13.4m, Ground Slots - 3942, Yard Capacity - 19710, Reefer Plugs - 240, Quay Cranes - 7, RTG's - 24, ICD Trains - Daily.
- Container Terminal - 2 (SCB1, SCB2, SCB3 CITPL):- Quay Length - 832m, Depth - 15.5m, Ground Slots - 5424, Yard Capacity - 27120, Reefer Plugs - 120, Quay Cranes - 3, RTG's - 10, ICD Trains - Daily.
- Chennai Port is an ISPS Compliant Port.
- Chennai Port Trust awarded with Certification of ISO 14001: 2004.
- 24 deep drafted berths.
- All weather port.
- Round the clock operations.
- Handling multiple cargo, Third position among all Major Ports in terms of cargo handled in India.
- Berthing on arrival.
- Passenger terminal of international standard.
- First of its kind in Indian Ports, Chennai Port has established the Marine Pollution Management to ensure Protection for Marine life.
- EDI connectivity with Customs, Bank, Online Port users Portal established and various port activities for the effective use of information technology under process.
- Excellent Rail Connectivity.

- Future Development Plan as of 10.03.2015
- Elevated four lane Link road from Chennai Port to Maduravoyal
- Estimated Cost -Rs1655cr. (Civil Works- 1345cr; LA & R&R- Rs310 crs.)
- Revised Estimate Cost -Rs1815 Crs. (Civil Works: Rs1345 Crs. R&R: Rs 470 Crs)
- ChPT and GOTN will be sharing the cost of LA and R&R equally.
- Project Starts from War Memorial gate of Chennai Port and runs upto Maduravoyal for a length of 19.01 kms, which runs along Cooum river bank upto Koyambedu and along NH 4 thereafter.
- Proposal included under NHDP Phase VII and BOT tender awarded to Soma Enterprise Ltd., Hyderabad in Jan, 2009 by NHAI
- Foundation Stone laid by the Honourable PM on 8.1.2009.
- Concession period - 15 years (incl. Construction period of 3 yrs.).
- Construction Period - 3 Years: Scheduled Date of completion 13.09.2013
- ChPT has released an amount of 51.01 crores towards its share of LA and R&R for the project.
- For the enhanced LA and R&R cost ChPT pursuing with MoS.
- The overall Physical Progress achieved as on March 2012 is 14.79%.
- Work not progressing in alignment of Cooum river due to issues raised by WRD, PWD, and GoTN.
- NHAI filed a WP in Honourable High Court of Madras against the stop notice by GoTN and as one of the respondents Chennai Port has also filed a counter and additional counter affidavits

#### **Modernisation of Chennai Port**

- Stage I work: Realigning of rail and road network inside the Harbour at an estimated cost of 40 crores was taken up and work completed.
- Stage II works will be taken up after lying of 3rd and 4th railway line by Southern Railway which the process of Transfer of land is under progress.

#### **Creation of Additional Storage Open Area by reclamation.**

- Stage I – works

- Creation of additional space of 7.8 hectares by Reclamation behind East Quay was completed.
- Construction of Rubble Mound Revetment completed on 30.08.08. The same was damaged during cyclone and a Contract work was awarded on 25.06.12 for rectifying the damage at a cost of 2.39 Crores. The contract was foreclosed due to further damage of revetment during cyclone 'Nilam' on 30.10.2012. Fresh Tender invited and the Contract awarded to a contractor on 27.08.2013 at a cost of 4.82 Crs. Physical progress is 38%.
- Stage II - work for creating additional space of 60 hectares near gate No. 1 is deferred since this area is covered under area earmarked for proposed New Outer Harbour to the north of the Bharathi Dock.

### Deepening of Channels, Basins and Berths

- Stage I - work for Modernization of Six Jawahar Dock Berths for deepening to -14m CD (Estimated Cost of 43.54 crs)
- Berth modernization works are completed in all the berths except a meagre portion at JD east (JDVI)
- Capital dredging work at Dr. Ambedkar Dock, Jawahar Dock.

**The work was awarded on 26.07.12, and the physical progress of Maintenance Dredging is 100% & Capital Dredging is 71%.**

### Weaknesses of the Chennai Port

- Congested approach road.
- Traffic evacuation not allowed during the day time.
- Restricted land availability.
- Higher tariffs for use of plants & equipments.
- Sub-optimal usage of rail connectivity.
- Exposure to dust & saline environment, requiring higher maintenance expense.
- Perceived need for improvement in service levels to retain existing clients, avoid them being lost to other ports and for developing new ones.
- Efficiencies lower and tariffs levels higher than those in international ports in the region like Singapore, Colombo, Hong Kong and Dubai.
- Ageing workforce.
- Need for additional environment / pollution management.
- Surplus labour of about 600 in different departments.
- Restriction on investment of surplus fund to government securities and nationalized banks fixed deposits.

- High turnover among skilled staff in marine department like pilots and marine engineers.
- Inadequate manpower to operate the dredgers round the clock resulting in lower utilization of dredgers and higher fixed costs thereby increasing overall cost of dredging.
- Port does not have fully computerized management accounting system.
- Lack of systematic marketing and Customer Relationship Management skills / systems.

### Opportunities of the Chennai Port

- The Port serves the geographical regions of Tamil Nadu, Pondicherry, South Andhra Pradesh and parts of Karnataka and has now emerged as a hub on the east coast of India.
- Major cargo being handled at the Port are Containers, Automobiles Exports, POL, Iron Ore, Coal, Fertilizers (products and raw materials), and general cargo items.
- The Chennai port is one among the major ports having Terminal Shunting Yard and running their own Railway operations inside the harbour on the East Coast.
- To cater to the latest generation of vessels and to exploit the steep increase in containerized cargo the port is planning to welcome the future with a Mega Container Terminal, capable of handling 5 Million TEUs.
- Positive economic environment in the years to come with an anticipated 7% GDP growth rate, stable inflation and foreign exchange rates and rising international trade.
- Increasing containerisation and good forecasted demand with strong business potential.
- Strong forecasted growth in automobile exports.
- Increased ship sizes.
- Increasing automation.
- Possibility to tap other sources of revenue:
- Ship Repair facilities and services to Ship Owners.
- Engineering Consultancy Services to Other Ports.
- Provision of Marine Services/BOT services to other Ports.
- Management & Technical consultancy & training services to other smaller ports.
- JV or strategic investment with minor / intermediate ports.
- Potential to attract main line vessels.
- Better road connectivity after construction of proposed

- road projects.
- To facilitate cruise tourism by construction of a cruise terminal and marina.
- Increased focus on private-public-partnerships and the landlord model of port operations.

### Threats of the Chennai Port

- Threats analyse the competitiveness required in the light of developing neighbouring ports. (Ennore, Karaikal, Tuticorin, Katupalli, Krishnapatnam, Kakinada, and Visakhapatnam Ports).
- The elevated four lane link road from Chennai Port to Maduravoyal is under court litigation
  - After hearing proceedings, the judgment has been delivered by Honorable High Court in favour of Chennai Port and NHAI.
  - However, a SLP has been filed by WRD, PWD, and GoTN in Honorable Supreme Court against the judgment delivered by Honorable High Court. NHAI & Chennai Port Trust filed impede petitions against the SLP.
  - During the last hearing on 07.04.2014, the Honorable Supreme Court directed all the parties to name an expert body to address the grievances of the State Government.
  - Hence, NHAI is being requested to submit the name of the Expert body to the Honorable Supreme Court.
- Competition from major ports especially from Ennore and Tuticorin port.
  - Competition from minor ports mainly from Krishnapatnam.
  - Expected ban on export of minerals.
  - Loss of lucrative cargo like coal & iron ore.
  - Increase in awareness among common public about environmental issues.
  - There are too many gates providing access to port, increasing vulnerability and efforts to maintain security.
  - High possibility of reduction in government funding.

### Conclusion

The main strengths of Chennai Port is due to proximity to a large number of industries including automobiles, coal, fertilisers, ores, oil and project cargo. The strategic location of the port on the east coast enables it to be connected to over

50 international ports. The geographical features of the port include quay length of 5.5 km, and a draft of 16 metres which enables it to handle large vessels. Chennai Port itself services the hinterland of the states of Tamil Nadu, Andhra Pradesh, Karnataka and Pondicherry and this gives it a good customer base. Chennai Ports weakness is due to the restricted land availability as it is situated within Chennai city limits. The efficiency of Chennai port is lower than other competing international container ports in the region such as Singapore, Colombo and Dubai. The tariff levels of Chennai port are also higher than other international ports in the region and hence Chennai Port loses business to these competing International Ports. There is surplus labour at the port due to it being a government controlled port and this brings down the competitiveness of the port. There is a problem due to congested roads while approaching the port and this affects the inland connectivity of the port. The threats to the port are from the International Ports in the geographical area such as Singapore, Dubai and Colombo which are increasing their capacity. Also increasing competition is coming from the new ports which includes both government controlled ports and private ports. This includes the Ennore Port which is corporatised and Vallapadam which is the private port. The ban on export of mineral ore can affect the future business prospects of the Port. The coal and iron business can also shift to the nearby Ennore Port. Chennai Port will have rising business opportunities due to India's GDP growing steadily at over 7% and also India's growing international trade. The major cargoes such as Containers, Automobiles Exports, POL, Iron ore fertilizers and general Cargo items shall provide growth for the port. There is also a strong forecasted growth in automobile exports. The planned increase in draft at the port and building of new container terminals will enable bigger size vessels to visit the port and lead to a boom in business. The long term opportunity for the Chennai Ports growth will mainly come from the four C's Containers, Cars, Cruise and Clean Cargoes Business.

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