

3. ChPT 幹部とのディスカッション資料（2017年8月5日）

**The Project on Improvement of  
Chennai Port Operation  
(Phase II)**

**Interim Report**

**5 August 2017  
JICA Study Team**

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**I. Outline of the Technical  
Assistance Phase II**

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## 1. Objectives of the Project “Phase II”

- To enhance the efficiency of the operation of Chennai port by reducing container movement lead times through following up the activities taken in Technical Assistance Phase I and entrenching congestion alleviation measures to the counterpart (ChPT)
- To examine the validity and effectiveness of possible port infrastructure projects (including IT related projects) for modernizing port operation

## 2. Dispatched Schedule

Number of Dispatch	Schedule completed
First (Ninth) Dispatch	Sunday, 12 <sup>th</sup> February – Saturday, 11 <sup>th</sup> March, 2017
Second (Tenth) Dispatch	Sunday, 23 <sup>rd</sup> April – Saturday, 20 <sup>th</sup> May, 2017

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## 2. Contents of the Project “Phase II”

### (1) Follow-up of Previous Measures for Improvement of Port Operation

The Study Team will follow-up the several surveys and activities conducted during Phase I for further improvement of port operation.

### (2) Modernization of Port Operation through Soft and Hard Measures

The Team will continue to promote operational improvement through utilization of an IT system and development/improvement of port facilities.

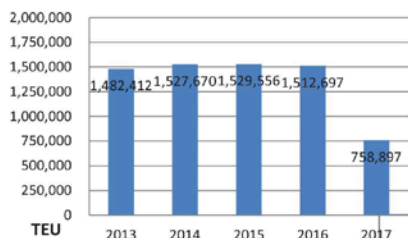
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## II. Follow-up of Previous Measures for Improvement of Port Operation

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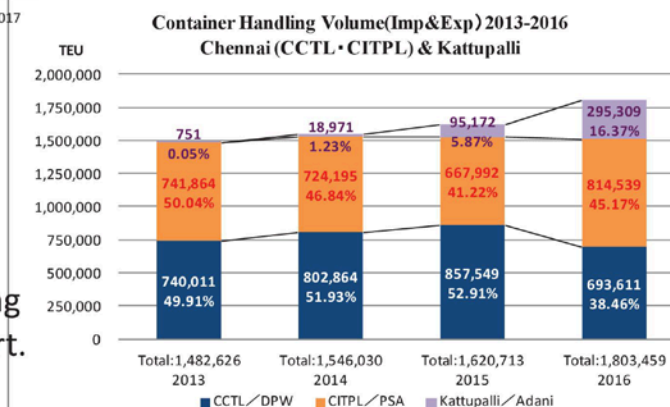
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### 1. Container Handling Volume Trends



The total handling volume has shown a tendency to decline since 2011. Among major cargoes, container cargo and POL are stable.

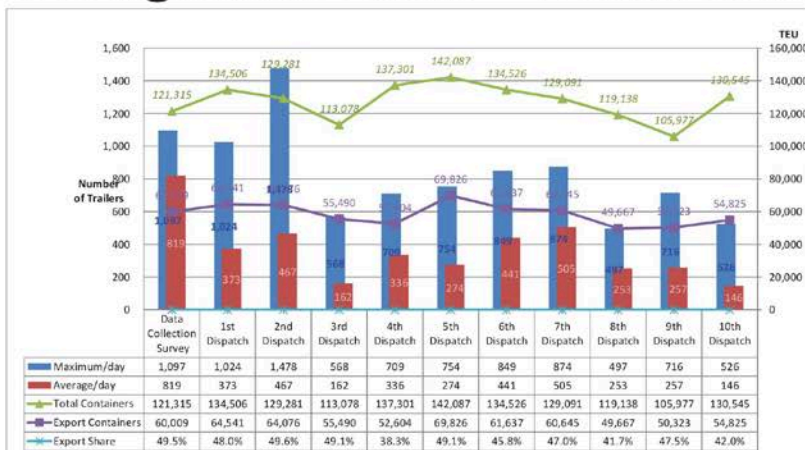
Container demand in the entire Chennai area has recently been increasing. The increase in container demand seems to be being captured by Kattupalli port.



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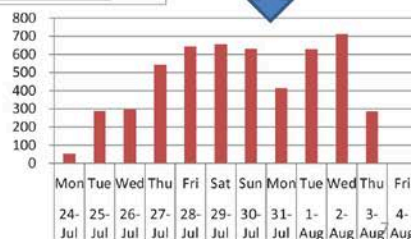
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## 2. Congestion Status – Trends outside the Port



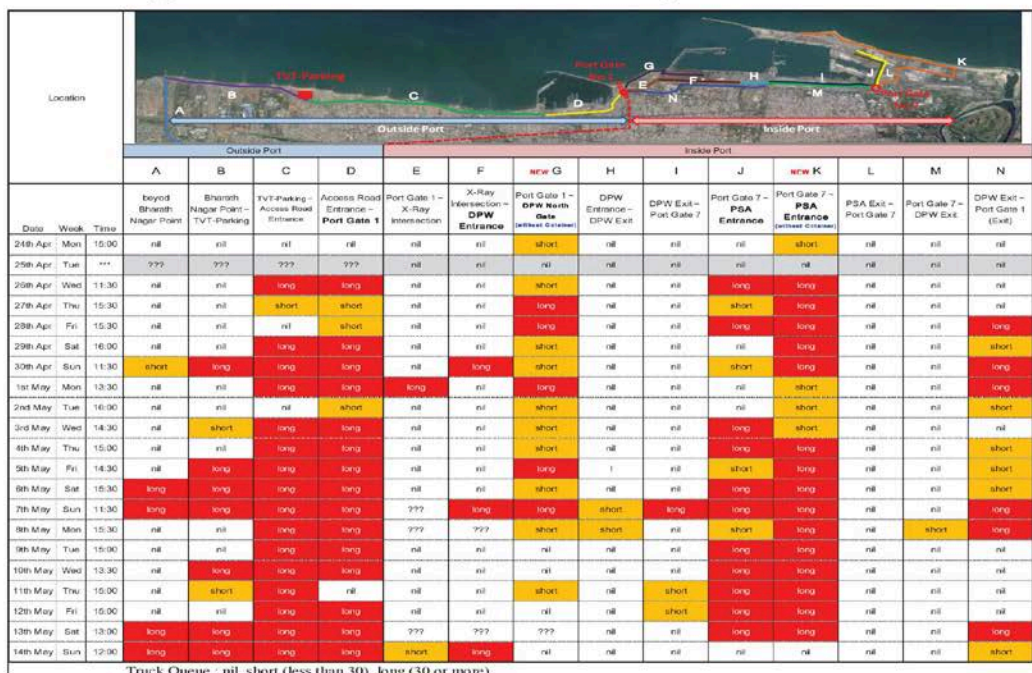
Number of queuing trailers this time

Based on a daily survey by the Team, the number of queuing trailers has decreased even though the number of handling containers has increased in April this year.



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## 2. Congestion Status - inside/outside the Port



## 2. Congestion Status - Summary

- Queues are seldom observed beyond TVT-Parking at 9th and 10th dispatches.
- Incoming trailers are controlled at Port Gate No.1.
- The traffic flow in the area in front of DPW IN gate where heavy congestion was usually observed is now relatively normal.
- Both terminals set up an in-gate and separate route respectively for empty chassis. These measures have been useful in securing normal traffic flows.
- In line with the increase in handlings volumes, congestion toward PSA IN gate shows an increasing trend. When a queue extends near Port Gate No.7, Port Gate No.1 temporarily shuts down entry procedures for trailers.
- Traffic flow is relatively smoother than before, however many parked trailers still occupy roads.
- Then number of queuing trailers has increased this time. The dedicated lane at SH114 cannot be used due to bury pipelines.

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## 3. Following up of Demonstration Trials

### 1) Demo 1: Simplification of gate procedures at Port gate No.1

The barcode reading system has not been re-started; however, the reception time has been shortened due to the simplification of the manual procedure.

### 2) Demo 2: Utilization of TVT-Parking

The TVT-parking was not used as a parking lot although the issuance of HEP is still in operation.

### 3) Demo 3: Restriction of parking on internal roads

The traffic flow of trailers inside the Port seemed to be smoother due to the separation of traffic flow of empty trailers from laden ones; however, a large number of parked trailers are still observed.

### 4) Demo 4: Allocation of traffic control persons at intersections together with introduction of traffic flow regulation

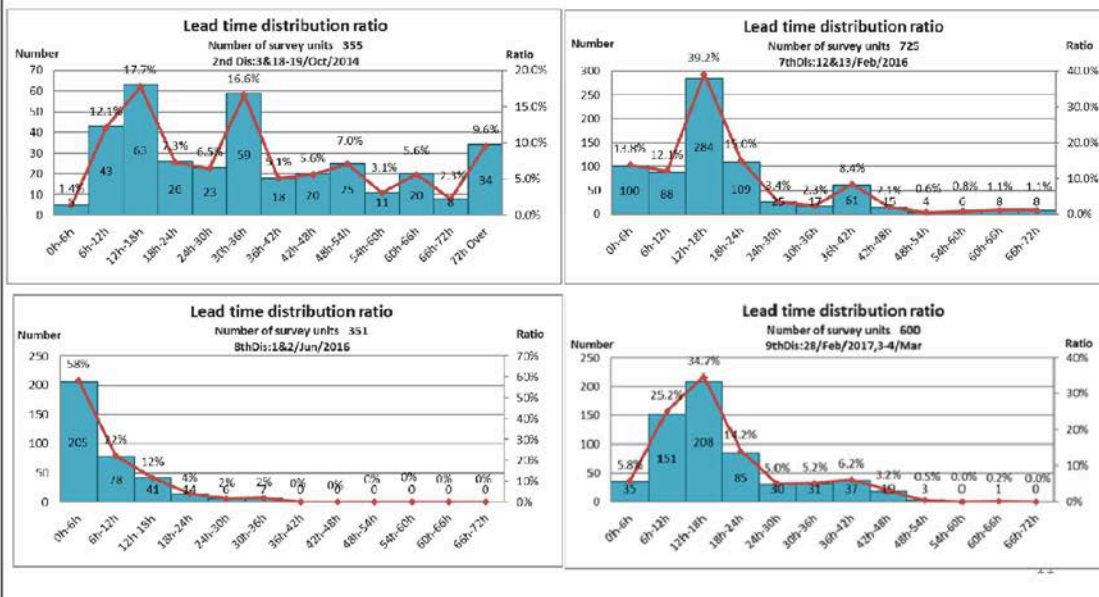
Trailer drivers have a greater awareness of the no parking rule at the intersections; however, the instructions by traffic control persons are still required.

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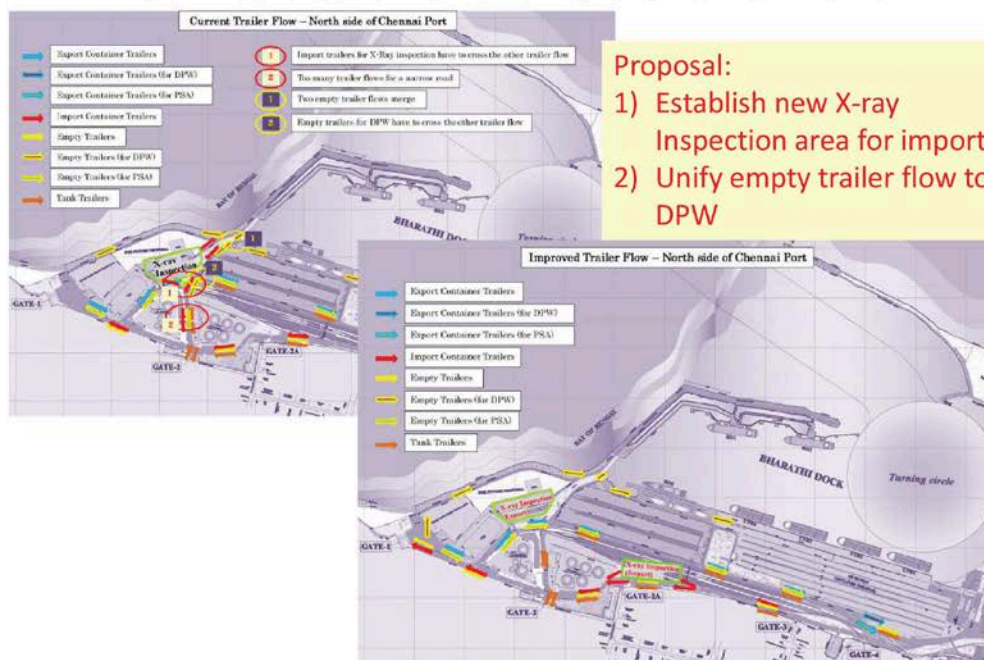
## 4. Lead Time Analysis

**Lead Time:** According to the four times survey results, the lead time decreased to less than 20 hours during the 7th and 8th survey from 40 hours recorded during the 2nd dispatch. The lead time during the 9th dispatch was around 20 hours.



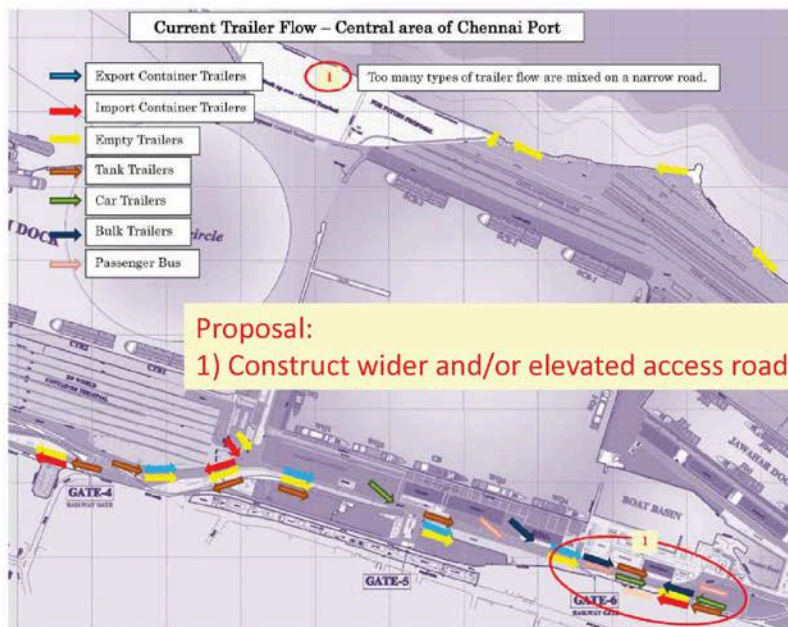
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## 5. Trailer Flow inside the Port



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## 5. Trailer Flow inside the Port



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## 5. Trailer Flow inside the Port



## 6. Voices from Port Users

- Berth occupancy rates are relatively high. This means either volume might be high or handling efficiency is low. Port System should be modernized
- Smooth traffic flow inside the port is the biggest hurdle in the growth of Chennai port.
- Waiting space should be provided nearby the traffic route.
- Port facilities and cargo handling equipment are old and insufficient.
- Environment of the cargo handling area is not good due to severe dust and the narrow handling area.
- and others

## III. Modernization of Port Operation through Soft and Hard Measures



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## Priority Projects

### 1. Basic Policy for Priority Project

- Chennai port plays a vital role on supporting the economy of both the region and India as a whole and this roll will remain in future.
- However, Chennai port faces a variety of pressing issues and competitors have been expanding their business in recent years.
- To overcome the issues mentioned later, Chennai port has to improve the efficiency of port operation, modernize facilities and enhance the port's competitiveness.

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## Priority Projects

### 2. Pressing Issues

- 1) Normalization of traffic flows inside (and outside) the port
- 2) Improvement of superannuated facilities
- 3) Securing sufficient space for cargo handling and storage
- 4) Improving efficiency of cargo handling
- 5) Improvement of the environment
- 6) Accommodating larger vessels
- 7) Improvement of navigational safety
- 8) Securing future development space for the next generation of the port

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## Priority Projects

### 3. Feature of the Priority Projects

Mainly redevelopment projects which will improve and realign the existing facilities.

### 4. Phase of the Projects

#### I. Short-term projects

- Infra related projects (Project A to F)
- IT related projects (Project IT-1 & IT-2)

#### II. Long-term projects (Project G & H)

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## Priority Projects

### 5. Traffic Projections

Commodity	2014/15	2020	2025	2035	Remarks
<b>Liquid Cargo</b>					
POL	12.7	13.3	13.1	14.3	19.2
Vegetable Oil	1.1	1.7	1.8	2.1	3.4
<b>Dry and Break Bulk Cargo</b>					
Thermal Coal (Loading)	0.0	0.0	0.0	0.0	0.0
Thermal Coal (Unloading)*	0.0	6.1	0.0	7.0	12.5
Coking Coal	0.0	0.0	0.0	0.0	0.0
Iron Ore	0.1	0.2	0.3	0.4	0.4
Steel	1.4	1.5	2.5	2.9	5.5
Limestone	2.6	1.5	1.4	1.2	1.2
Dolomite	1.0	0.6	0.5	0.3	0.3
Fertilizers	0.5	0.7	0.8	0.9	1.0
<b>Containers and other Cargo</b>					
Containers (MnTEU)	1.55	0.9	1.2	1.4	2.4
Others	3.2	4.3	5.7	6.0	10.8
<b>Total (MMTPA)</b>	<b>52.5</b>	<b>47.7</b>	<b>49.3</b>	<b>66.9</b>	<b>191.0</b>

\* Traffic potential include non-power thermal coal consumption in the hinterland and part of the thermal coal requirement projected for Melur plant.  
Conversion Factor Used for Containers Projections: 1 TEU = 19.3 Tons

Due to the emerging ports in the vicinity of Chennai port, container volume handled at Chennai port is forecast to fall from about 1.55 million TEUs in 2015 to 0.9 million TEUs in 2020 but will then begin to increase again towards 2025 and beyond.

In 2025, Chennai and Kamarajar ports will handle total of 3.0 -3.5 M TEUs among 3.2 - 3.7 M TEUs, while remaining volume will be handled at Krishnapatnam port according to the report. Kattupalli port are not mentioned.

Traffic Projections in the Chennai Region Unit: Million TEU

Port	2014/15	2020	2025	2035
Chennai	1.55	0.9	1.2 - 1.4	2.0 - 2.4
Kamarajar	0.0	0.8	1.1 - 1.3	1.8 - 2.1
Krishnapatnam	0.08	0.1 - 0.12	0.15 - 0.19	0.25 - 0.34
Chennai Cluster	1.7	2.32	3.0	-
		2.4	3.2 - 3.7	-

Source: Final Report on Cargo Traffic Projections & Logistics Bottlenecks, Ministry of Shipping, July 2016

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## Priority Projects

### 6. Demand and Capacity

Cargo Handled	Berths Assigned	I/E	Current Capacity (MTPA)	2020		2025		2035	
				Projected Traffic (MTPA)	Capacity Augmentation Required (MTPA)	Projected Traffic (MTPA)	Capacity Augmentation Required (MTPA)	Projected Traffic (MTPA)	Capacity Augmentation Required (MTPA)
Crude & POL	BD1, BD 2, BD 3	I	15.00	13.30	0.00	13.10	0.00	14.30	0.00
Dry & Breakbulk	NQ, WQ1 to 3, JD1 to 6, OPB	VE	17.50	16.30	0.00	12.20	0.00	17.10	0.00
Fertilizers	SQ1 & SQ 2	I	2.50	0.70	0.00	0.80	0.00	1.00	0.00
Containers	CTB1 to 4, SCB1 to 3	VE	58.00	17.37	0.00	23.16	0.00	38.60	0.00
<b>Total</b>		VE	<b>93.00</b>	<b>47.67</b>	<b>0.00</b>	<b>49.26</b>	<b>0.00</b>	<b>71.00</b>	<b>0.00</b>

Source: Sagarmala Final Report

The occupancy rate of each berth is relatively high (an average rate is 52% according to the ChPT data). However, because of insufficient space for cargo handling and storage, insufficient preparation of trucks for transit of cargoes and others, cargo handling is inefficient which may also be a factor in the high berth occupancy rate. Therefore, Chennai port should make efforts to improve the productivity and efficiency of operations.

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## Priority Projects



+ Project for improvement of the environment inside the port (F)

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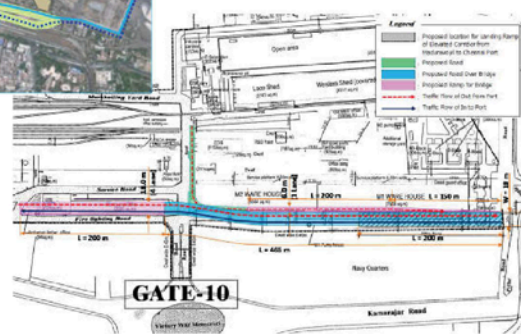
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## Priority Projects: Short-term project A



Traffic Flow Separation  
between DPW and PSA

Descending of the Maduravoyal  
Elevated Road



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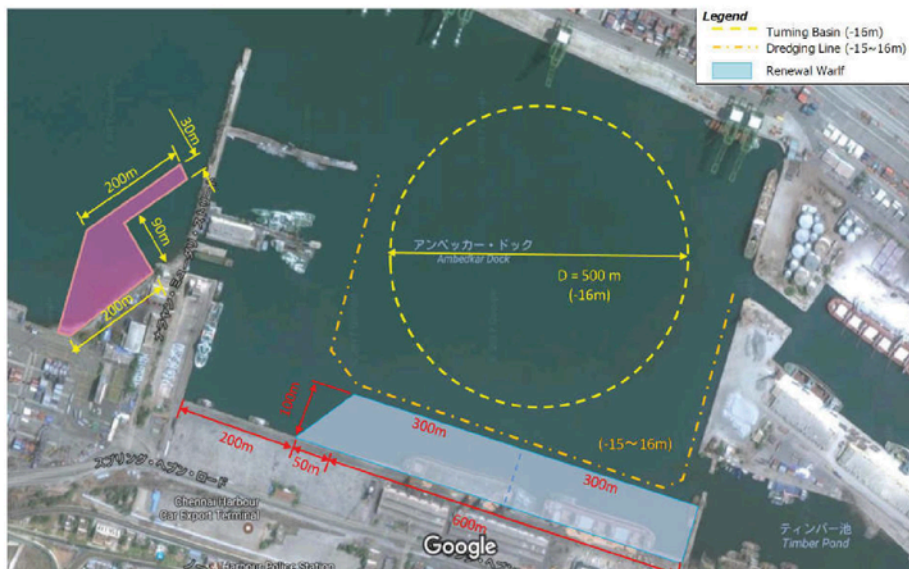
## Priority Projects: Short-term project A

<b>Project Name</b>	A Realignment/Development of Internal Roads		<b>Construction Period/Cost</b>	Option A-1: Period: Approximately 36 months Cost: Approximately USD 42 M Option A-2: Period: Approximately 36 months Cost: Approximately USD 129 M
<b>Target</b>	i) Normalization of traffic flow inside the Port		<b>Prescreening</b>	(refer to the Interim Report)
<b>Purpose</b>	/To improve the traffic flow and ease congestion inside the Port		<b>Project Effects</b>	<b>Quantitative Effect</b> /Reduction of time cost by elimination of congestion: maximum value of 42.4 Crore Rs/year
<b>Scope</b>	/To develop new internal roads for separation of DPW and PSA related traffic and to introduce a flyover section of ; <u>Option A-1: 500m in length</u> <u>Option A-2: 2,000m in length</u>  Option H-1: Internal roads are interconnected with the Maduravoyal elevated road. Descendent points of the said road are explained.		<b>Quantitative Effect</b>	/More reliable transport /Shortening of transport time (benefit of trucking company) /Improvement of the environment
<b>Rationale</b>	(refer to the Interim Report)		<b>Implementation Scheme</b>	/Own fund /Public fund
			<b>Issues for Implementation</b>	/Congestion alleviation at specific points is important. /Further study is needed because of the progress of improvement of the internal roads /Careful execution plan is needed in order to avoid further congestion

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## Priority Projects: Short-term project B



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## Priority Projects: Short-term project B

<b>Project Name</b>	B Redevelopment of Dr. Ambedkar Dock (West Wharf)
<b>Target</b>	ii) Improvement of superannuated facilities, iii) Securing sufficient space for cargo and storage, v) Improvement of the environment, vi) Accommodating larger vessels, vii) Securing navigational safety
<b>Purpose</b>	/To modernize the West Wharf of Dr. Ambedkar Dock and the water area
<b>Scope</b>	/To expand the west wharf by 600m in length and 100m in width /To rearrange the cargo handling area, and /To deepen the water area of the Dock to 15m to 16m
<b>Rationale</b>	(refer to the Interim Report)

<b>Project Effects</b>	<b>Quantitative Effect</b>	/Income from the use of the West Wharf: 65.0Crore Rs/year
	<b>Qualitative Effect</b>	/Improvement of cargo handling efficiency /productivity /Decrease of damaged cargo /Expansion of business opportunities /Improvement of navigational safety /Improvement of the environment
<b>Implementation Scheme</b>		/Public fund /Private fund (handling equipment, etc.) (including PPP and/or SPV for operation)
<b>Issues for Implementation</b>		/Detailed use plan of berth is needed /Execution plan to avoid shortage of berths is needed /User's opinion is important /Introduction of warehouses and equipment should be considered in connection with fund raising

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## Priority Projects: Short-term project C



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## Priority Projects: Short-term project C

<b>Project Name</b>	<b>C</b> Widening of Jawahar Dock Entrance
<b>Target</b>	ii) Improvement of superannuated facilities, v) Accommodating larger vessels
<b>Purpose</b>	/To improve superannuated facilities and to accommodate larger vessels
<b>Scope</b>	/To widen the entrance of Jawahar Dock to more than 43m (effective width) in order to accommodate vessels of over-panamax class
<b>Rationale</b>	(refer to the Interim Report)

<b>Construction Period/Cost</b>	Period: Approximately 25 months Cost: Approximately USD 26.4 M
<b>Prescreening</b>	(refer to the Interim Report)
<b>Project Effects</b>	<b>Quantitative Effect</b> /Loss of income by collapse of the entrance: 13.83Crore Rs/year
	<b>Quantitative Effect</b> /Improvement of safety
<b>Implementation Scheme</b>	/Public fund /Own fund
<b>Issues for Implementation</b>	/Safe and realistic execution plan should be studied further to avoid negative effects to the tanks located behind the entrance /Securing navigational safety during execution works is important / Execution works should be done from the land side /To make fund raising easier, this project should be combined with others

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## Priority Projects: Short-term project D



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## Priority Projects- Short-term project D

<b>Project Name</b>	D		<b>Construction Period/Cost</b>	Period: Approximately 20 months Cost: Approximately USD 29 M
	Reclamation/Redevelopment of Timber Pond (including a base for tug boats)		<b>Prescreening</b>	(refer to the Interim Report)
<b>Target</b>	iii) Securing sufficient space for cargo and storage, iv) Improving efficiency of cargo handling, v) Improvement of the Environment, i) Normalization of traffic flow inside the Port		<b>Quantitative Effect</b>	/Savings of expenditure for improvement of handling efficiency: 7.23Crore Rs/year
			<b>Qualitative Effect</b>	/Improvement of cargo handling efficiency / productivity /Normalization of the traffic flow /Improvement of the environment
<b>Purpose</b>	/To secure space for cargo and storage, improve the efficiency of cargo handling and to help the traffic flow be normalized		<b>Implementation Scheme</b>	/Own fund /Public fund (as a combined project with redevelopment of wharves) /Private fund (in case of installation of super structure) (including PPP scheme and establishment of SPV for operation)
<b>Scope</b>	/To reclaim Timber Pond and demolish buildings in the surrounding premises for use of cargo handling and storage and new road development /To develop a base for tug boats			<b>Issues for Implementation</b>
<b>Rationale</b>	(refer to the Interim Report)			

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## Priority Projects: Short-term project E

Comprehensive Redevelopment around Jawahar Dock



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## Priority Projects- Short-term project E

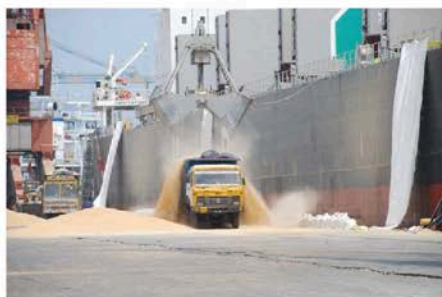
<b>Project Name</b>	<b>E</b> Integrated Redevelopment of Jawahar Dock and Surrounding Area		<b>Construction Period/Cost</b>	Period: Approximately 25 months Cost: Approximately USD 44.5 M
<b>Target</b>	ii) Improvement of superannuated facilities, iii) Securing sufficient space for cargo handling, iv) Improving efficiency of cargo handling, v) Improvement of the Environment, vi) Accommodating larger vessels, i) Normalization of traffic flow inside the Port		<b>Prescreening</b>	(refer to the Interim Report)
<b>Purpose</b>	/To redevelop the JD entrance and handling yard of surrounding area and to contribute to the alleviation of congestion		<b>Project Effects</b>	<b>Quantitative Effect</b>
<b>Scope</b>	/To widen the JD entrance to more than 43m /To rearrange the yard area behind the JD west wharf integrally with the yard of ONB and the Timber Pond area /To convert the JD west wharf in to a wharf for accommodating RO-RO vessels /To ease traffic congestion caused by car carriers behind Dr. Ambedkar Dock			<b>Qualitative Effect</b>
<b>Rationale</b>	(refer to the Interim Report)		<b>Implementation Scheme</b>	/Public Fund /Own fund /Private Fund (including PPP for introduction of Multilayer car pool)
			<b>Issues for Implementation</b>	In addition to the issues of Project C & D, /Discontinuation of the use of the road between the JD yard and ONB /Further examination of introduction of multilayer car pool and integrated use with ONB yard

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## Priority Projects: Short-term project F



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## Priority Projects- Short-term project F

<b>Project Name</b>	<b>F</b> Improvement of the Environment inside the Port	<b>Construction Period/Cost</b>	(refer to the Interim Report)
<b>Target</b>	vi) Improvement of the Environment	<b>Project Effects</b>	/Improvement of the environment (such as protecting the health of port workers and users, preventing fatigue, and enhancing safety) /Improvement of productivity (in case of introduction of silo, etc.) /Improvement of the quality of transport service
<b>Purpose</b>	/To improve the environment of the port; specifically to reduce dust generated from cargo handling	<b>Qualitative Effect</b>	
<b>Scope</b>	/To improve cargo handling method /To secure water and power resources /To further develop green areas /To introduce rules on port usage	<b>Implementation Scheme</b>	/Own fund /Private fund (participation in environment management) /Public fund (in case of installation of the large scale equipment)
<b>Rationale</b>	(refer to the Interim Report)		

Measures	Basic Idea
i) Improvement of cargo handling	To generate less dust and prevent dust dispersion by introducing equipment, materials and so on
ii) Securing of water and power resources	To obtain water and electricity necessary for maintaining the quality of the environment from natural surroundings.
iii) Introduction of Greenery	To develop a greenery plan and plant trees and grasses
iv) Improvement of the outdoor working conditions	To install necessary equipment such as sun shade and toile, etc. which are helpful to prevent diseases
v) Notification of and compliance with the rules for using port	To prepare general rules for the usage of the port in order to keep the port in environmentally sound condition

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## Priority Projects: Short-term project IT-A



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## Priority Projects- Short-term project IT-A

<b>Project Name</b>	IT - A Introduction of Web Portal System	
<b>Target</b>	i) Visualization of congestion status of container trailers inside and outside the port ii) Sharing Key Performance Indicator (KPI) for traffic congestion among stakeholders	
<b>Purpose</b>	To foster cooperation among stakeholders by sharing the common indicator which shows the degree of congestion and its improvement	
<b>Construction Period/Cost</b>	Period: Approximately 12 months Cost: Approximately USD 1 M	
<b>Project Effects</b>	1) Effects of measures on traffic congestion can be evaluated objectively among stakeholders 2) Cooperation among stakeholders is obtained 3) Image of Chennai Port is improved	
<b>Implementation Scheme</b>	/Private fund /Public fund /Own Fund	
<b>Scope</b>	1) Computer Server ( Web/Database/Application, etc.) - To apply redundant fault tolerant hardware configuration - To include the necessary system software such as OS, DB, WEB, etc. - The implementation cost may be reduced by more than 50 % if these functions are implemented in the existing ChPT Homepage. 2) Cameras and data communication equipment, etc. - To link the existing CCTV system and obtain live pictures inside the Port - To implement Web cameras at key congestion points outside the Port. 3) Application Software - Connection with external systems - Publishing live pictures at congestion points - Publication of trailer movement statistics in real time, etc. - Publishing the statistics of traffic congestion inside and outside the Port. - Statistical functions currently provided in ChPT Homepage can be enhanced in the Web Portal System.	

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# Priority Projects: Short-term project IT-A

**Leads among CFS/Port Gate/Terminals**

Date	Outside Port			ZeroGate to CCTL			ZeroGate to CITPL			ZeroGate to Terminal		
	#Cases	Ave	< 12Hrs	#Cases	Ave	< 3Hrs	#Cases	Ave	< 3Hrs	#Cases	Ave	< 3Hrs
17/07/2017 (Mon)	925	04:45	96%	160	00:46	93%	433	01:26	93%	593	01:15	93%
18/07/2017 (Tue)	993	10:10	71%	359	01:59	86%	443	01:58	84%	802	01:49	85%
19/07/2017 (Wed)	1218	11:29	61%	477	03:58	54%	553	05:52	32%	1030	04:50	42%
20/07/2017 (Thu)	1176	07:37	86%	496	02:01	83%	548	05:10	23%	1044	03:41	51%
21/07/2017 (Fri)	1276	09:51	77%	437	00:58	91%	400	02:00	81%	837	01:28	87%
22/07/2017 (Sat)	1288	09:38	75%	438	02:28	73%	509	04:48	13%	947	03:43	41%
23/07/2017 (Sun)	779	10:07	75%	402	05:38	31%	364	04:13	50%	766	04:58	40%

**Qty of Trailers Passing through CFS/Port Gate/Terminals Summary for 17/07/2017 (Mon)**

Time	CFS	ZeroGate	CCTL	CITPL	Terminal
0:00	140	84	23	29	52
1:00	121	43	6	33	39
2:00	81	36	11	38	49
3:00	92	97	19	24	43
4:00	75	70	19	30	49
5:00	97	59	20	29	49
6:00	94	51	2	19	21
7:00	104	44	4	22	26
8:00	112	32	1	11	12
9:00	103	58	3	30	33
10:00	106	30	3	23	26
11:00	149	82	2	25	27
12:00	177	82	0	11	11
13:00	164	37	2	24	26
14:00	140	88	2	22	24
15:00	146	82	3	22	25
16:00	156	86	6	23	29
17:00	149	95	3	27	30
18:00	197	51	3	22	25
19:00	193	74	8	19	27
20:00	197	72	17	17	34
21:00	176	33	13	31	44
22:00	170	86	18	17	35
23:00	211	79	18	35	53
Total	3350	1551	206	583	789
Average	139.6	64.6	8.6	24.3	32.9
Mix	211	97	23	38	53

**Chennai Port**

click either one of the menu to show the Traffic information of container

Demonstration trial of a Web-Portal system on Chennai HP is ongoing.

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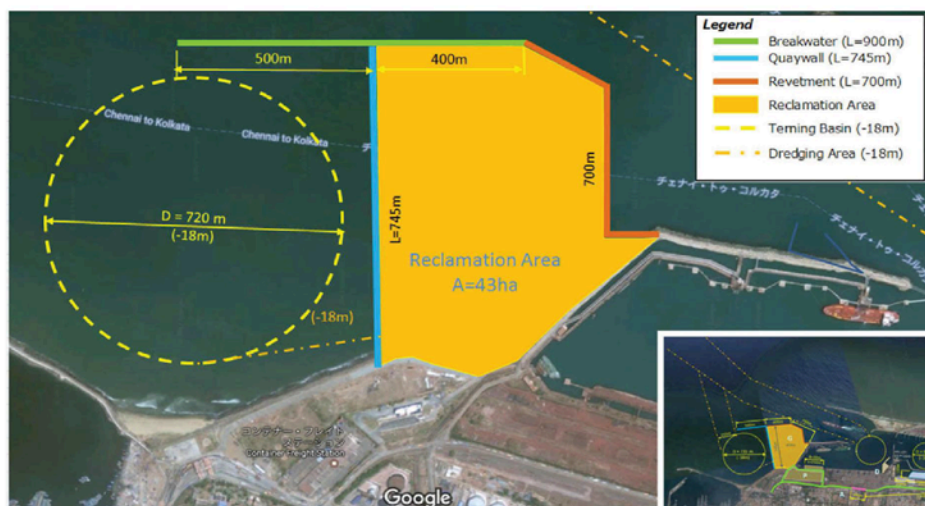
# Priority Projects- Short-term project IT-B

Project Name	IT - B
Target	Introduction of RFID based Harbor Entry Pass System iii) Improvement of port entry / exit procedures by issuing RFID based Harbor Entry Permit (HEP) iv) Improvement of port security v) Improvement of port entry / exit management functions
Purpose	To expedite port entry / exit procedure as well as improve port Security
Construction Period/Cost	Period: Approximately 12 months Cost: Approximately USD 3M
Project Effects	1) To strengthen Port entry / exit control 2) To utilize RFID based HEP for other purposes
Implementation Scheme	/Private fund /Public fund /Own Fund

- Scope**
- Card issuing machine
    - A machine which issues HEP cards, etc.
  - Kiosk for entry /exit at Port gate
    - RFID reader for Port entry card, RFID reader for truck, etc.
  - Port entry card for persons x 10,000
    - Passive RFID tag, photo of holder, etc.
    - FeliCa type RFID technology, which is commonly used in Japan and very reliable, is recommended.
  - RFID tags for trailers x 8,000
    - To be attached on a front panel of a trailer
    - It must be examined whether RFID tag of container trailer used in NACFS RFID system can be also utilized for this application.
  - Computer servers
    - Cloud environment may be applied
  - Application software
    - To issue HEP and associate with RFID tag, etc.
    - To extend validity period of HEP
    - Reception function at Port Gate No.1 - 10
    - To output statistical reports
    - Connection with external systems
  - Operational support
    - On site support for a few months after commencement of operation, etc.

Interim Report

## Priority Projects: Long-term project G



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## Priority Projects: Long-term project G

<b>Project Name</b>	<b>G</b> Expansion toward the Northern Area		<b>Construction Period/Cost</b>	Period: Approximately 36 months Cost: Approximately USD 390 M				
<b>Target</b>	vii) Securing future development space		<b>Prescreening</b>	(refer to the Interim Report)				
<b>Purpose</b>	/To expand the northern area of the port as a strategic project for securing competitiveness, attracting port users and leading to the future generation of the port		<b>Project Effects</b>	<table border="1"> <tr> <td><b>Quantitative Effect</b></td> <td>/Income from handling container (under the assumption that one of target cargoes is containers)</td> </tr> <tr> <td><b>Qualitative Effect</b></td> <td>/Strengthening of competitiveness /Making the port more attractive to users /Expansion of business opportunities</td> </tr> </table>	<b>Quantitative Effect</b>	/Income from handling container (under the assumption that one of target cargoes is containers)	<b>Qualitative Effect</b>	/Strengthening of competitiveness /Making the port more attractive to users /Expansion of business opportunities
<b>Quantitative Effect</b>	/Income from handling container (under the assumption that one of target cargoes is containers)							
<b>Qualitative Effect</b>	/Strengthening of competitiveness /Making the port more attractive to users /Expansion of business opportunities							
<b>Scope</b>	/To develop large scale berths with the depth of 18m together with handling yard, a breakwater and channel for accepting world's largest class cruise and container vessels		<b>Implementation Scheme</b>	/Private fund (including PPP scheme and SPV scheme) /Public fund				
<b>Rationale</b>	(refer to the Interim Report)		<b>Issues for Implementation</b>	/This project is proposed from the long term point of view; therefore preparations should start from now. /Grasping the timing and volume of potential cargo is important /Further technical study is needed (specifically to grasp wave conditions) /Future direction of development and the intention of the Navy should be considered				

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Interim Report

## Priority Projects: Long-term project H



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## Priority Projects: Long-term project H

	<b>H</b>
<b>Project Name</b>	Inter-connection of internal roads with the Maduravoyal elevated road project
<b>Target</b>	i) Normalization of traffic flow inside the Port
<b>Purpose</b>	/To improve the traffic flow and ease congestion inside the Port (Furthermore to ease congestion outside the port)
<b>Scope</b>	Option H-2: the flyover section of Option A-2 is to be connected directly with Maduravoyal elevated road (length of the flyover section is about 3.9km) (further idea: city traffic is to be allowed to pass through the Maduravoyal elevated road using the flyover section of the port.)
<b>Rationale</b>	(refer to the Interim Report)

<b>Construction Period/Cost</b>	Period: Approximately 36 months Cost: Approximately USD 236 M	
<b>Prescreening</b>	(refer to the Interim Report)	
<b>Project Effects</b>	<b>Quantitative Effect</b>	(refer to Project A)
	<b>Qualitative Effect</b>	/Normalization of the traffic flow /Reduction of congestion outside the port
<b>Implementation Scheme</b>	/Public Fund /Private Fund (including PPP scheme and SPV scheme)	
<b>Issues for Implementation</b>	In addition to the issues of Project A, /Further study on project effects and implementation scheme is needed	

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Interim Report

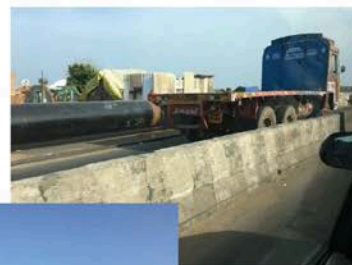
## Project Considered: Project P

Redevelopment of Bharathi Dock II berth and yard for accommodating RO-RO vessels and car parking with a capacity of about 5,000 – 6,000 vehicles



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Thank you for  
your Attention



JICA Study Team



博多港ふ頭株式会社  
Hakata Port Terminal Co., Ltd.

[koyama@ocdi.or.jp](mailto:koyama@ocdi.or.jp)  
[fukazawa@mes.co.jp](mailto:fukazawa@mes.co.jp)  
[h-kimoto@hakatakou-futo.co.jp](mailto:h-kimoto@hakatakou-futo.co.jp)  
[suzuli-t@ocdi.or.jp](mailto:suzuli-t@ocdi.or.jp)  
[kunita@ocdi.or.jp](mailto:kunita@ocdi.or.jp)  
[oshikawa@ocdi.or.jp](mailto:oshikawa@ocdi.or.jp)

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