Appendix

1. **Steering Committee (17 February 2017)**
2. **Steering Committee (18 May 2017)**
3. **Interim Report Presentation (5 August 2017)**
4. **Steering Committee (17 August 2017)**
5. **Darft Final Report Presentaion (24 October 2017)**
6. **Steering Committee (26 October 2017)**
7. **Running Rules for the Committeee for Improvement of Port Operation and Management (Draft)**
8. **Running Rules for the Working Group for Sustainalbe Operation of Entry/Exit Control System in Chnnai Port (Draft)**
9. **Operation Rules in the Waiting Area for Trailers (Draft)**
10. **Running Rules for Trailer Entry Process at Terminal IN Gates (Draft)**
11. **Proposed Rules on Use of the Port**
12. **Hiterland Analysis of Chennai Port**
13. **Execution method for shortening of constriction works (Project B and G)**
14. **The detail of Construction Method (Project C)**
15. **Examination of Reflected Waves and Calmness (Project G)**

1. Steering Committee (17 February 2017)

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

Steering Committee
9th Dispatch

17 February 2017
JICA Study Team

1

I. Outcomes of the Technical Assistance Phase I

2

1. Major Activities Conducted To Date

(1) Survey on Traffic Congestion Status

- Regular Observation of Traffic Congestion
- Survey on Processing Time at Port Gate No.1
- Survey on Trailers Passing through Gates
- Survey on Gate Processing Efficiency
- Transportation Time from CFS to Port Gate No.1

(2) Implementation of Demonstration Trials and Follow-up Activities

- Demonstration trial of Simplification of the Procedure at Gate No.1
- Demonstration trial of Utilization of TVT-Parking
- Demonstration trial of Restriction of Parking on Internal Roads
- Demonstration trial of Allocation of Traffic Control Persons in Port Area

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(3) Implementation of IT Related Measures

- Web Portal System for sharing information related to traffic congestion
- Barcode Reading and RFID System

(4) Examination of Efficient Process of Trailer Flow Inside the Port

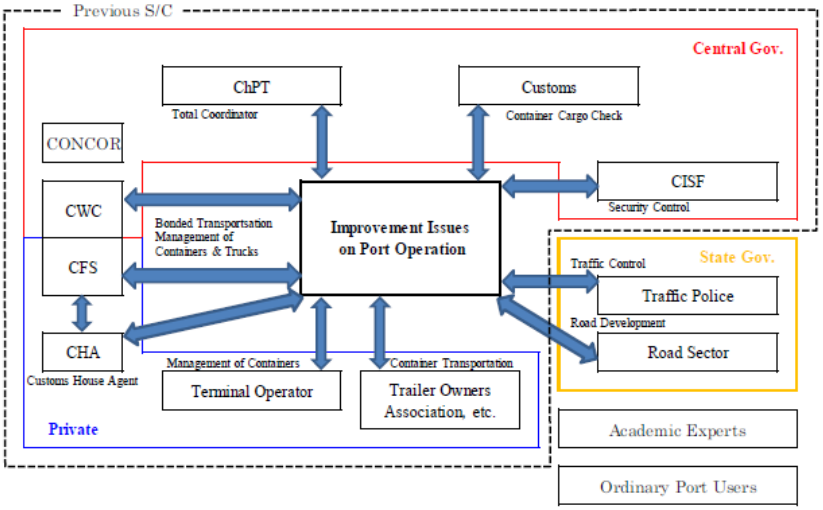
- Study on the Flow of Trailers using Monitoring Camera at Terminal IN Gate.

(5) Study on the Direction of the Master Plan

(6) Improvement of Synergy on the Operation of Regulatory Authorities Concerned

- Participation of the Tamil Nadu Government (the traffic police and the road department) in the Steering Committee

4



Many stakeholders are involved in congestion issues and other issues related to port operation. Enlarged committee for exchanging views about port operation.

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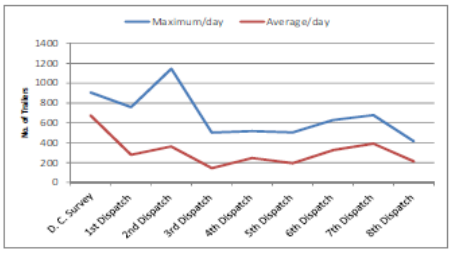
2. Outcomes To Date

(1) Outcome of measures for decreasing the number of trailers outside the port

The maximum number of queuing trailers has clearly been reduced along SH114

No. of Trailers outside the Port	Data Collection Survey 6-7/12/2013	First Year Technical Assistance				Second Year Technical Assistance			
		1st Dispatch 21/7-13/8/2014	2nd Dispatch 30/9-5/11/2014	3rd Dispatch 19/1-7/2/2015	4th Dispatch 13-24/4/2015	5th Dispatch 7-28/7/2015	6th Dispatch 30/9-20/10/2015	7th Dispatch 27/1-16/2/2016	8th Dispatch 22/5-10/6/2016
Number of Trailers by converting the handled containers per month to 100,000									
Maximum No./Day	906	759	1146	502	517	530	628	678	415
Average No./Day	676	278	362	143	245	193	326	391	211
Max No./Day on SH114	–	297	346	217	230	216	332	147	248
Ave No./Day on SH114	–	160	186	53	133	113	130	88	127



Trend of number of queuing trailers outside the port

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(2) Outcome of measures for improving the processing time

The processing efficiency at Port Gate No.1 was dramatically reduced by simplifying the verification process and introducing the barcode reading system.

Processing time at Port Gate No.1

Processing Time at Port Gate No.1		Jun. 2014	Feb. 2015(during the Demonstration Trial)	Apr. 2015(after the Demonstration Trial)
Average Processing Time / Truck / Lane	IN Gate	3.5	2.5	1.8
	OUT Gate	5.5	2.0	2.3

(3) Outcome of measures for reducing the transit time

The transit time from CFSs to Port Gate No.1 was dramatically shortened.

Transit time required CFSs to Port Gate No.1

Transit Time Required from CFSs to Port Gate No.1	First Year		Second Year		
	2nd Dispatch (2014)		7th Dispatch (2016)		8th Dispatch
	04 Oct.	18/19 Oct.	12 Feb.	13 Feb.	02 Jun.
Average Transit Time during Surveys	28:29 hrs	40:25 hrs	17:43 hrs	19:24 hrs	14:54 hrs
No. of Trailers surveyed	155	200	327	398	129
No. of Queuing Trailers on the Survey days	595	803/689	874	785	497

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II. Outline of the Technical Assistance Phase II

8

1. Objectives of the Project "Phase II"

(1) Purposes of the project

- 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) Area of the Project

Chennai port and its surrounding area

(3) Counterpart and Implementing Agencies

- Counterpart : Chennai Port Trust (ChPT)
- Concerned Organizations: Ministry of Shipping(MOS), Tamil Nadu State, Central Industry Security Force (CISF), NACFS, CWC, Customs Department, Trailers Association (Owners and Drivers), etc.

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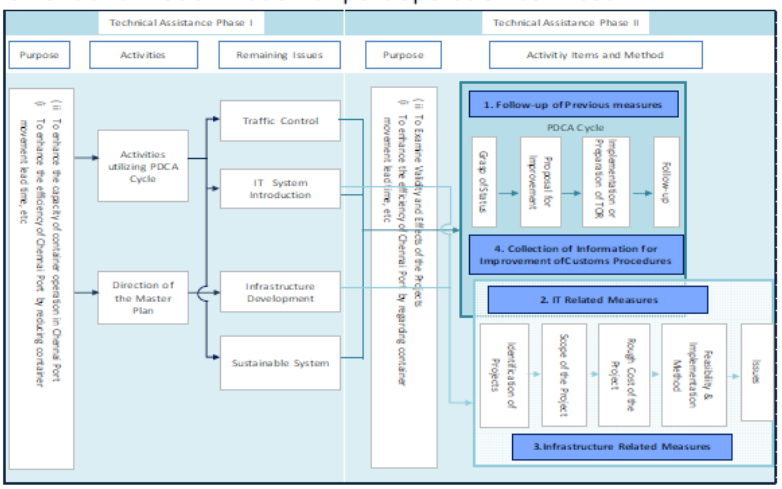
2. Remaining Issues and Challenges

Many positive outcomes on port operation were produced through Technical Assistance Phase I. However, there are still issues to be addressed for further improvement and modernization of port operation as Phase II .



Relationship between Technical Assistance Phase I & II

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3. Policy for Implementation of the Project (Technical Assistance Phase II)

(1) Technical Aspects

- Utilization of the Survey and Outcomes of Technical Assistance Phase I.
- Proposals for improvement and modernization of port operation based on actual data and observations
- Consideration of a new Indian Government policy "Sagarmala"
- Efforts for collecting information on nearby competitive ports

(2) Operational Aspects

- Coordination with concerned organizations
- Detailed and sufficient explanations
- Exchange of Views with port users (including Japanese companies)

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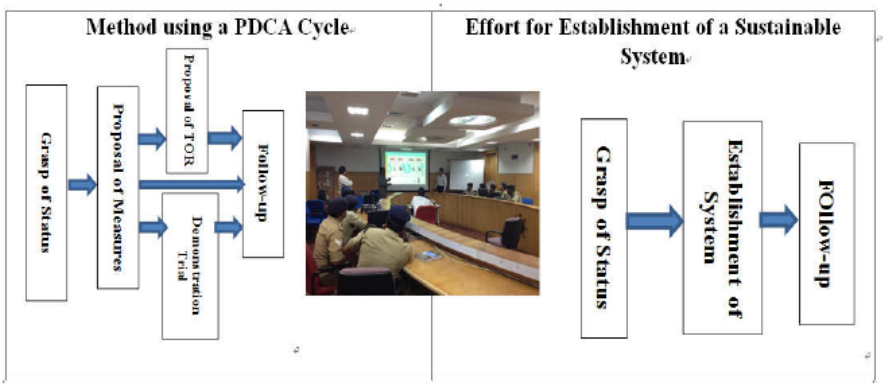
4. Contents of the Project "Phase II"

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

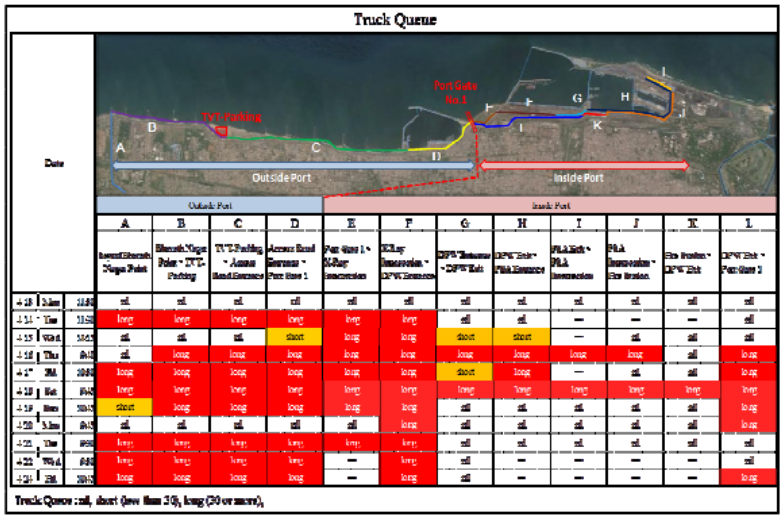
The Study Team will follow-up the several surveys and activities conducted during Phase I for further improvement of port operation.



12

1) Continuous Surveys of Traffic Congestion

The Team will continue the regular observation inside and outside the port in order to examine the characteristics of traffic congestion.

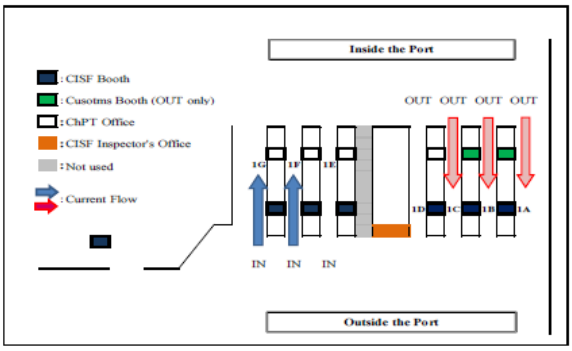


Congestion Status inside/outside the Port (April 2015)

13

2) Continuous Survey for Grasping Conditions around the Port

The Team will re-examine the operational procedure at the expanded 8 lane Port Gate No.1 and the access road to the Gate



Lane Allocation at Port Gate No.1 (as of June 2016)

3) Follow-up of Technical Assistance Phase I

The Team will continue to follow-up the demonstration trials which were conducted during Technical Assistance Phase I.

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Demo1: Simplification of Gate Procedure at Port Gate No.1 by implementing Barcode Reading System

- The system is no longer being operated.
- Port Gate is extended from 4 lanes to 8 lanes, but only 5 lanes are used.
- RFID system is yet to be commenced. Waiting for tag implementation for trailers (RFID tags are implemented for only approx. 5% of trailers→It becomes 70 % now?)

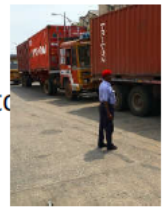
Demo2: Utilization of TVT-Parking : HEP applicants to park inside

- TVT-Parking is still used for issuing HEP
- CWC is planning to open export CFS here and waiting for the approval from Customs

Demo3: Restriction of Parking on Internal Roads

- Parking regulation is yet to be implemented
- Enough parking space but not fully utilized
  - Many parked trailers still along in/out path
- Internal roads are much improved
  - Clear lane separations are implemented
  - Roads widening and repairs are in progress

Demo4: Allocation of Traffic Control Persons at Intersections to regulate traffic



- Traffic Control Persons are allocated in some place
  - X-ray screening intersection, near Port Gate No.7, etc
  - CISF officers also found during heavy congestion

Modernization of the Port 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.

Improvement of Operation utilizing Introduction of IT System.	Improvement of Operation utilizing development of Infrastructure.

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(2) Modernization of Port Operation (IT related Measures)

1) Operational Improvement utilizing IT system

The Team will conduct the study on the utilization of RFID system as well as Web Portal System for further traffic decongestion.

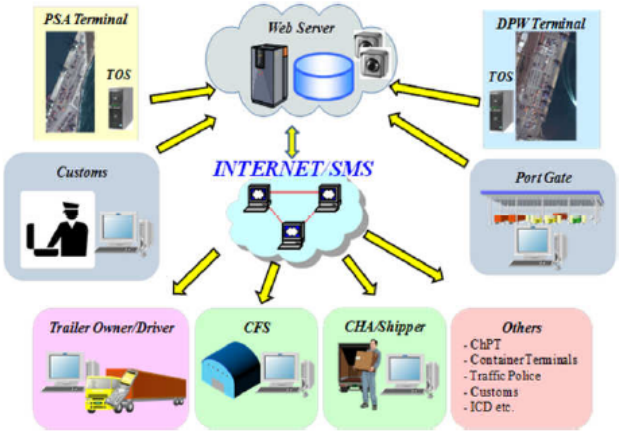

Image of Web Portal System

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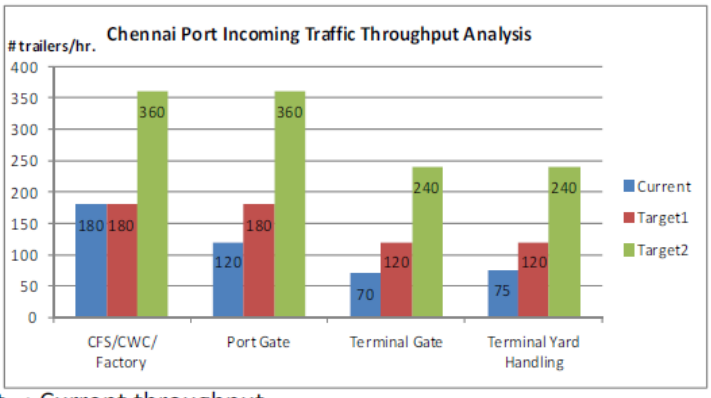
2) Examination for Improving Efficiency of Procedures at Port Gate No.1

The Team will continue to study the relation between the trailer processing capacity among major points in trailer flow and traffic congestion during Phase I. The Team will also study the utilization of RFID etc. to further increase efficiency.



Current : Current throughput
Target 1 : Target throughput for congestion free movement under the current traffic volume
Target 2 : Expected throughput if terminals handle up to their capacity

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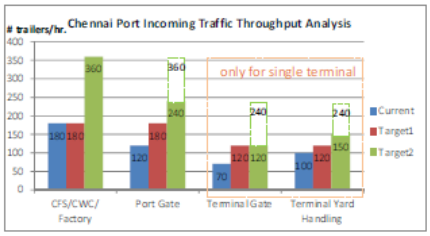
Incoming Traffic Throughput Analysis

➢ Measures to achieve the target1

Key Points	Current	Target1	Required Improve	Measures
Port Gate	120	180	50%	Allocate more lanes for incoming trailers (from 2 to 3)
Terminal Gate	70	120	70%	Implement TOR by the Team (3. 1)) : 20% Implement RFID tag system : 50%
CY Handling	100	120	20%	Improve RTG productivity from 10mv/hr. to 12mv/hr. for gate transaction



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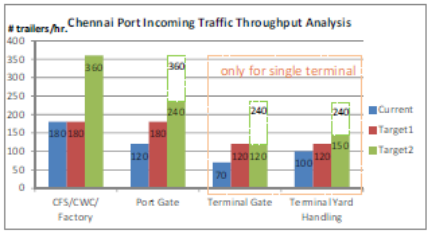
Incoming Traffic Throughput Analysis

➢ Measures to reach the Target2

Key Points	Target1	Target2	Required Improve	Measures
Port Gate	180	240	40%	Allocate more lanes for incoming trailers (from 3 to 4)
	240	360	50%	Increase of gate lanes required
Terminal Gate	120	240	100%	Increase of gate lanes required
CY Handling	120	150	25%	Improve RTG productivity up to 15mv/hr.
	150	240	60%	Increase of RTGs (approx. 6) required



3) Establishment of a Sustainable System

The Team will support the operation of the RFID system which replaced the barcode system for Port entry/exit control.
The Team will stress the importance of confirming the maintenance system, establishing an emergency contact plan and setting up a regular meeting to ensure continuous operation.

4) Identification of Possible Projects and Examination of Implementation System

The Team will identify candidate projects through discussions with ChPT which may include a traffic control support system for the taskforce team and Port entry/exit control system for trailer drivers and so on.

The Team will also clarify the necessary hardware and the system functions and examine project scales and implementation schemes, if necessary.

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(3) Modernization of Port Operation (Infrastructure related Measures)

1) Study on Possible Infrastructure Project

The Team will examine measures on how to improve and develop port facilities for modernization of Chennai port as well as utilization of IT system.

Indian Government announced the Sagarmala project in November, 2016, which is a strategic initiative of the Government to modernize India's ports and contribute to India's growth through port-led development.

Future cargo demand and port facility capacity will be studied in this project.

On the other hand, ChPT requested the Team to study the following projects.

1) Expansion of Dr. Ambedkar Dock
2) Development of mooring facilities alongside of the north breakwater to compensate for temporary reduction in Dr. Ambedkar Dock
3) Redevelopment of Jawahar Dock
4) Introduction of flyover in a section of internal roads

The Team will conduct study on possible infrastructure projects of Chennai Port.

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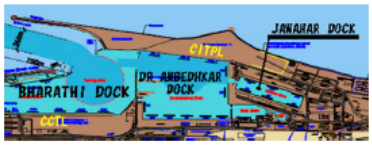
Ideas and Suggestions of Basic Directions for the Master Planning

- Target Cargo
  Container, Ro-Ro(Automobiles, Coastal), General Bulk, Steel Products etc.
- Improvement of Access to the Port
  Further road improvement, Underpass and Flyover to the Port
- Alleviation of Traffic Congestion outside/inside the Port.
  Elevated Road to separate traffic for IN/OUT inside the Port
- Effective Use of Open Space
  Car and Cargo Handing/Stock Facilities, Railway Transshipment Station, etc.
- Modernization of Port Facilities
  Deepening Docks and Berth Renovation for Enlargement of recent Vessels
- Competition and Correlation with Neighboring Ports
  Emergence of new ports, Diversion of cargoes
  Sufficient Capacity (2025 Projection 3mnTEU: 2016 Capacity over 4mnTEU)
- Consideration for the Environment
  Sustainable Development

Brief Study of Facility Design

The Team studied Jawahar Dock Entrance on request from ChPT



Layout of Chennai Port

< Width of JD Entrance>

- Existing Dimension
  - Existing Width : 33.5m (for Panamax Vessel)
  - Permissible Berth Draft : 14m (recently renovated and Dredged)
  - Target Cargo : Dry Bulk (Limestone, Clinker etc.)
- Point to Consider
  - Some bulk carriers have wider beams to load more cargo without increasing Vessel Draft
- How to Design the Width of JD Entrance


JD Entrance


Unloading at Jawahar Dock

Size of Target Vessel need to be identified

(Design Example)

Type of Wider Panamax Bulk Carrier : 43m

Width of New JD Entrance ＝ 43 ＋Allowance ≒ 48m

2) Demand Forecast of Chennai Port in Sagarmala Project

Chennai Port - Traffic Projections

Units: MMTPA (except Containers)

xx Base Scenario xx Optimistic Scenario

Commodity	2014-15	2020	2025		2035		Remarks
Liquid Cargo							
POL	12.7	13.3	13.1	18.8	14.3	19.2	• CPCL expansion considered in optimistic case
Vegetable Oil	1.1	1.7	1.8	2.1	3.0	3.4	
Dry and Break Bulk Cargo							
Thermal Coal (Loading)	0.0	0.0	0.0	0.0	0.0	0.0	
Thermal Coal (Unloading)*	0.0	6.1	0.0	7.0	0.0	12.5	• Traffic projections are contingent on permission to the port by Hon'ble SC to handle coal
Coking Coal	0.0	0.0	0.0	0.0	0.0	0.0	
Iron Ore	0.1	0.2	0.3	0.3	0.4	0.4	
Steel	1.4	1.9	2.5	2.9	3.0	5.5	
Limestone	2.5	1.5	1.4	1.4	1.2	1.2	
Dolomite	1.0	0.6	0.5	0.5	0.3	0.3	
Fertilizers	0.5	0.7	0.8	0.9	1.0	1.4	
Containers and other Cargo							
Containers (MnTEU)	1.55	0.9	1.2	1.4	2.0	2.4	• Traffic may further reduce by 2025 if Ennoyam comes up
Others	3.2	4.3	5.7	6.0	9.2	10.8	• Highly fragmented
Total (MMTPA)	52.5	47.7	49.3	66.9	71	101.0	

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

Container Cargo and Dry/Break Bulk volumes are estimated to decrease to1,200 thousand TEU and 5.5 million MT in 2025 from actual 155 million TEU and 5.6 million MT in 2014 in a Base Scenario, on the assumption that dirty cargo such as coal and iron ore etc. are not handled in Chennai Port.

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3) Preliminary Examination of Project Cost and Construction Schedule

The Team will conduct a rough cost estimation and propose a tentative construction schedule of the priority projects.

4) Preliminary Examination of Project Feasibility

The Team will roughly examine the economic feasibility of the priority projects for each project and/or a package of projects.

5) Examination of Project Priority and Implementation Schedule

To determine priority, the Team will evaluate the projects from a wide-ranging perspective including differentiation from competing ports, advantages of Chennai Port and possibility of financial assistance of the Japanese government.

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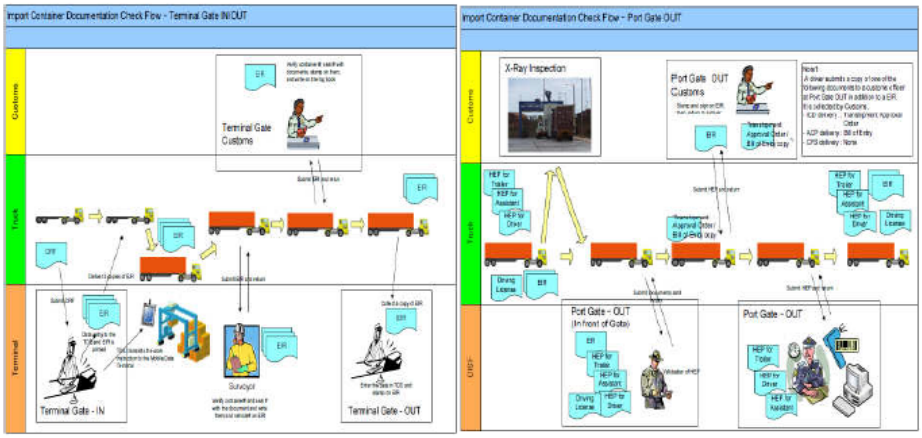
(4) Collection of Information for Improvement of Customs Procedures

The Customs procedure is one of important issues for alleviating the traffic congestion. The Team will grasp the Customs procedure through observation and interviews, identify issues, and examine an improvement plan.



Customs Procedure for Import Container inside the Port

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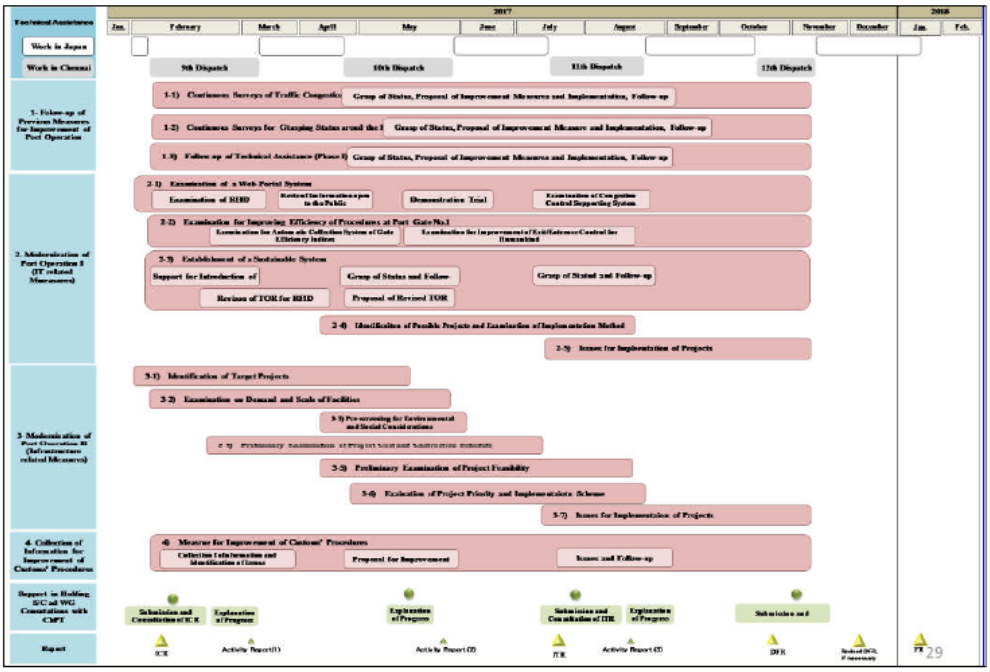
5. Implementation Schedule



6. Composition of the Study Team

Leader／Port Planning	Akira KOYAMA	The Overseas Coastal Area Development Institute of Japan（OCDI）
Modernization of Port Facilities (1)	Ryuichi KUWAJIMA	OCDI
Modernization of Port IT System (1)	Norihiro FUKAZAWA	Mitsui Engineering & Shipbuilding Co., Ltd.
Modernization of Port IT System (2)	Hiroshi KIMOTO	Hakata Port Terminal Co., Ltd.
Modernization of Port Facilities (2)	Osamu KUNITA	OCDI
Environmental and Social Consideration	To be determined	OCDI
Traffic Survey	Eiji HASEBE	OCDI
Modernization of Port Facilities (3) / Administrative Coordinator	Yoshikazu OSHIKAWA	OCDI

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7. Dispatch Plan

Dispatch Plan			Technical Assistance Phase II (the Third Year)												
			2017											2018	
Assigned Area	Name	Organization	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.
Leader/Port Planning	Akira KOYAMA	The Overseas Coastal Area Development Institute of Japan (OCDI)		■	■		■		■			■				
Modernization of Port Facilities (1)	Ryuichi KUWAJIMA	OCDI		■	■		■		■	■		■				
Modernization of Port IT Sytem (1)	Norihiro FUKAZAWA	Mitsui Engineering & Shipbuilding Co.,Ltd.		■	■		■		■	■		■				
Modernization of Port IT System	Hiroshi KIMOTO	Hakata Port Terminal Co., Ltd.		■	■		■		■	■		■				
Modernization of Port Facilities (2)	Osamu KUNITA	OCDI		■	■		■		■	■		■				
Environmental and Social Consideration	to be determined	OCDI					■									
Traffic Survey	Eiji HASEBE	OCDI		■						■						
Modernization of Port Facilities (3) /Administrative Coordinator	Yoshikazu OSHIKAWA	OCDI		■	■		■		■	■		■				
Activity Report					▼		▼			▼						
Report				▲ ICR					▲ ITR			▲ DFR			▲ FR	

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Thank you for your Attention

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2. Steering Committee (18 May 2017)

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

Steering Committee
10th Dispatch

18 May 2017
JICA Study Team

1

I. Outline of the Technical Assistance Phase II

2

1. Objectives of the Project "Phase II"

(1) Purposes of the project

- 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)
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(2) Area of the Project

Chennai port and its surrounding area

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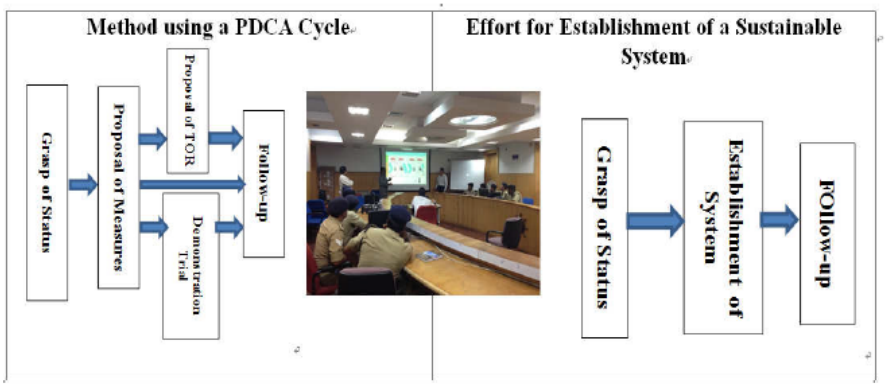
3

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.



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(2) Modernization of the Port 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.

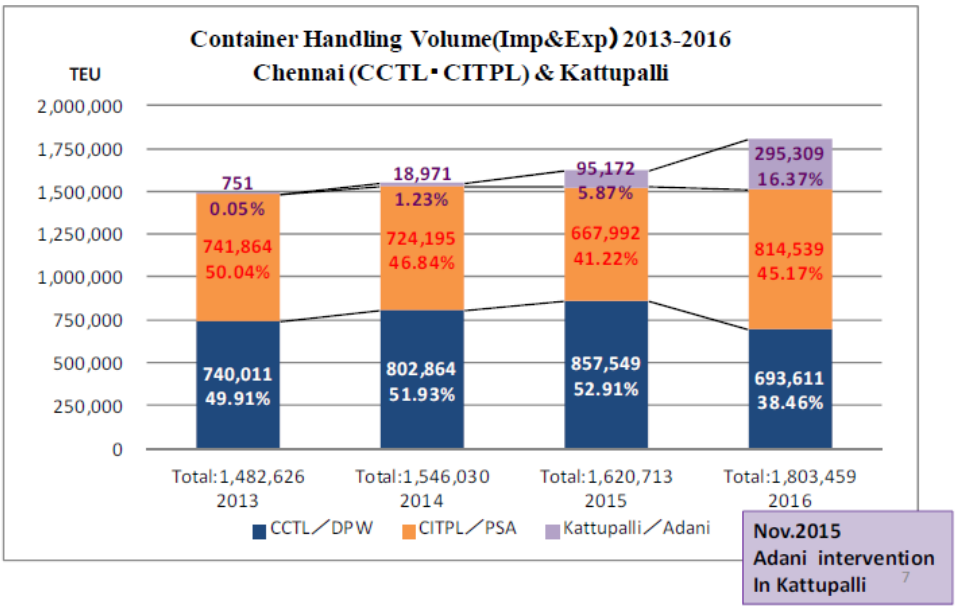
Modernization of Port Operation utilizing IT system	Modernization of Port Operation by developing/improving Infrastructure

5

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

6

1. Container Handling Volume Trends



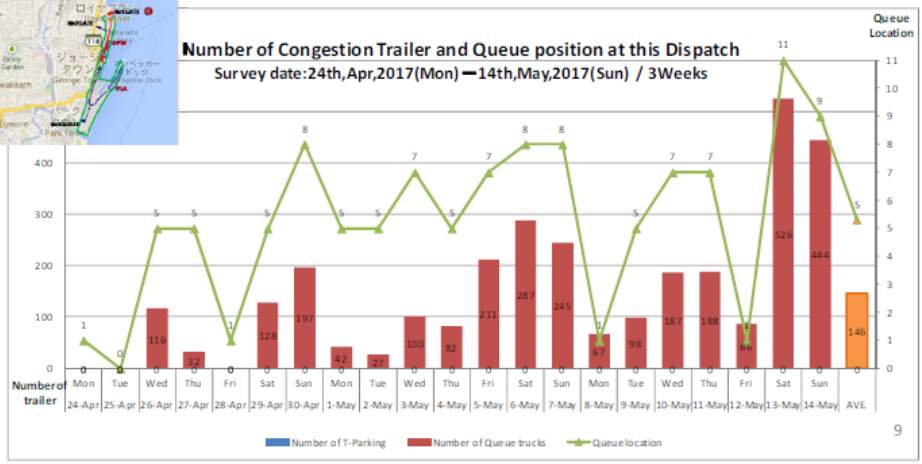
1. Trends of Container Handling Volume

- Container handling volume of Chennai port for the last four years has been broadly flat or slightly decreased.
- On the other hand, that of Kattupalli port operated by Adani group has rapidly been increasing. Specifically, the growth in container exports has been rapid.
- Among the two terminals in Chennai port, the handling volume at CICPL increased in 2016 while that at CCPL decreased; this represents a reversal of the past trend.

  Share in 2017 : CCPL 35 to 40 %, PSA 60 to 65 %
- Container demand in the entire Chennai area has been increasing; annual growth rate was 11.3% in 2016. The increase in container demand in this area seems to be being captured by Kattupalli port.

2. Congestion Status - outside the Port

/Congestion was not observed on weekdays. The number of trailers increased on weekends but congestion was not heavy except for last Saturday and Sunday (May 13 and 14th).
/TVT-Parking still has a function of issuing HEP.
/Traffic police were not assigned on weekdays but a few of them were observed on the weekend.



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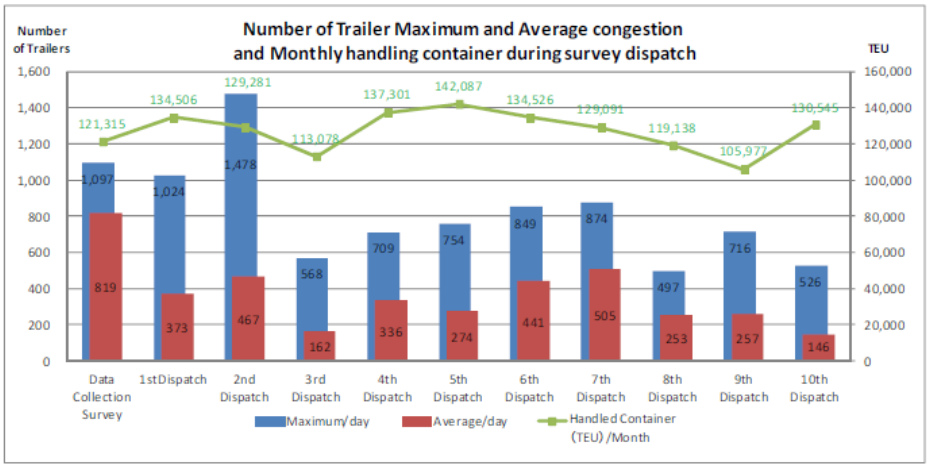
2. Congestion Status – Trends outside the Port



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

Location			Outside Port				Inside Port									
			A	B	C	D	E	F	new G	H	I	J	new K	L	M	N
Date	Week	Time	beyod Bharath Nagar Point	Bharath Nagar Point – TVT-Parking	TVT-Parking – Access Road Entrance	Access Road Entrance – Port Gate 1	Port Gate 1 – X-Ray Intersection	X-Ray Intersection – DPW Entrance	Port Gate 1 DPW truck Gate (without booking)	DPW Entrance – DPW Exit	DPW Exit – Port Gate 7	Port Gate 7 – PSA Entrance	Port Gate 7 – PSA Entrance (without booking)	PSA Exit – Port Gate 7	Port Gate 7 – DPW Exit	DPW Exit – Port Gate 1 (Exit)
24th Apr	Mon	15:00	nil	nil	nil	nil	nil	nil	short	nil	nil	nil	short	nil	nil	nil
25th Apr	Tue	***	???	???	???	???	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
26th Apr	Wed	11:30	nil	nil	long	long	nil	nil	short	nil	nil	long	long	nil	nil	nil
27th Apr	Thu	15:30	nil	nil	short	short	nil	nil	long	nil	nil	short	long	nil	nil	nil
28th Apr	Fri	15:30	nil	nil	nil	short	nil	nil	long	nil	nil	long	long	nil	nil	long
29th Apr	Sat	16:00	nil	nil	long	long	nil	nil	short	nil	nil	nil	long	nil	nil	short
30th Apr	Sun	11:30	short	long	long	long	nil	long	short	nil	nil	short	long	nil	nil	long
1st May	Mon	13:30	nil	nil	long	long	long	nil	long	nil	nil	nil	short	nil	nil	long
2nd May	Tue	16:00	nil	nil	nil	short	nil	nil	short	nil	nil	nil	short	nil	nil	short
3rd May	Wed	14:30	nil	short	long	long	nil	nil	short	nil	nil	long	short	nil	nil	nil
4th May	Thu	15:00	nil	nil	long	long	nil	nil	short	nil	nil	long	long	nil	nil	short
5th May	Fri	14:30	nil	long	long	long	nil	nil	long	l	nil	short	long	nil	nil	short
6th May	Sat	15:30	long	long	long	long	nil	nil	short	nil	nil	long	long	nil	nil	short
7th May	Sun	11:30	long	long	long	long	???	long	long	short	long	long	long	nil	nil	long
8th May	Mon	15:30	nil	nil	long	long	???	???	short	short	nil	short	long	nil	short	long
9th May	Tue	15:00	nil	nil	long	long	nil	nil	nil	nil	nil	long	long	nil	nil	nil
10th May	Wed	13:30	nil	long	long	long	nil	nil	nil	nil	nil	long	long	nil	nil	nil
11th May	Thu	15:00	nil	short	long	nil	nil	nil	short	nil	short	long	long	nil	nil	nil
12th May	Fri	15:00	nil	nil	long	long	nil	nil	nil	nil	short	long	long	nil	nil	nil
13th May	Sat	13:00	long	long	long	long	???	???	???	nil	nil	long	long	nil	nil	long
14th May	Sun	12:00	long	long	long	long	short	long	nil	nil	nil	nil	nil	nil	nil	short

Truck Queue : nil, short (less than 30), long (30 or more).

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2. Congestion Status - Summary

- Queues are seldom observed beyond TVT-Parking.
- Most trailers making queues are in the dedicated lane of SH114 for trailers.
- 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.

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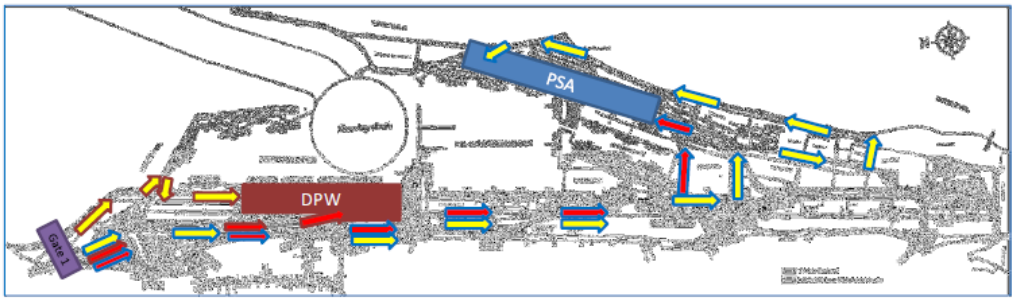
3. Changes inside/outside the Port
- Improvement of Trailer Traffic Flow -

Separating empty trailer flow from laden trailer



Empty Trailers for DPW
Empty Trailers for PSA
Export Trailers for DPW
Export Trailers for PSA

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3. Changes inside/outside the Port
- Improvement of Internal Road-

Dedicated road for empty trailers to DPW

Access road for the new coastal terminal

Widening the road for export trailers

Widening the road for import trailers

Widening the road for empty trailers to PSA

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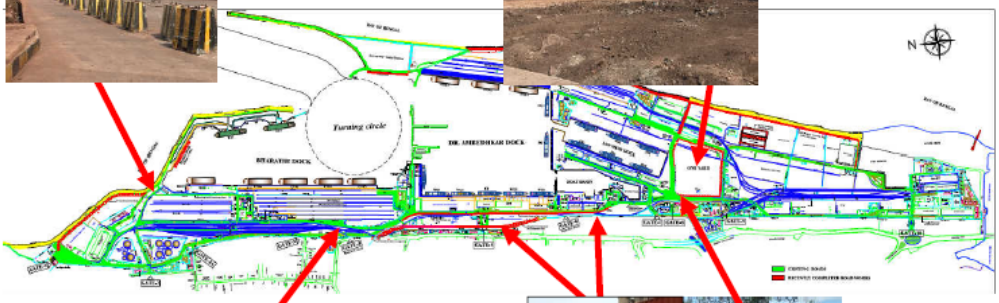
3. Changes inside/outside the Port

- Other Changes inside the Port -

Separation of import/empty trailer lane

Development of Cargo Handling Yard



Improvement of lane segregation at DPW in Gate

Allocation of Traffic Control Persons

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3. Changes inside/outside the Port

- Outside the Port -

Improvement of SH114 is in progress

Access road to Zero Gate has to be improved
- Road construction is to be continued
- Water sellers have to be evacuated

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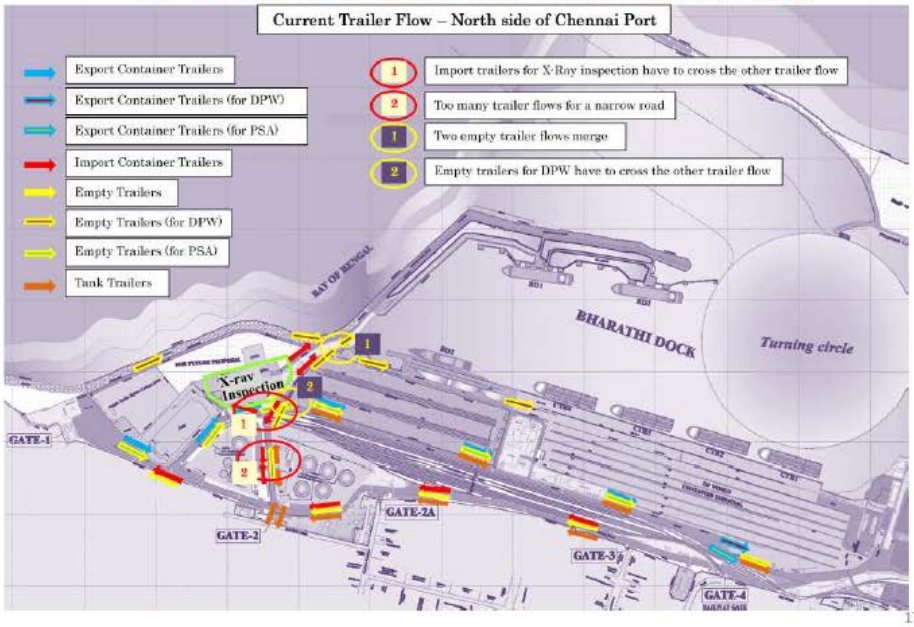
4. Trailer Flow inside the Port



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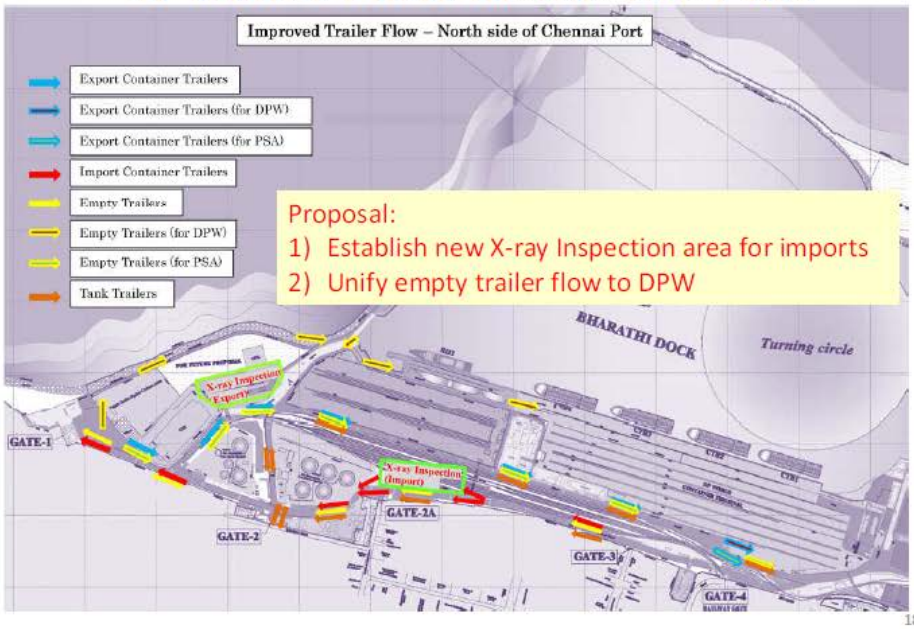
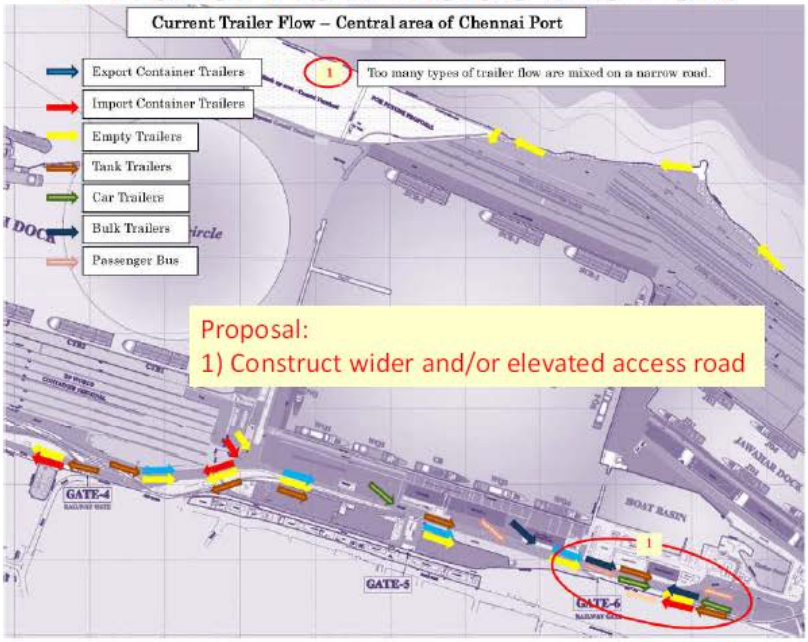
4. Trailer Flow inside the Port



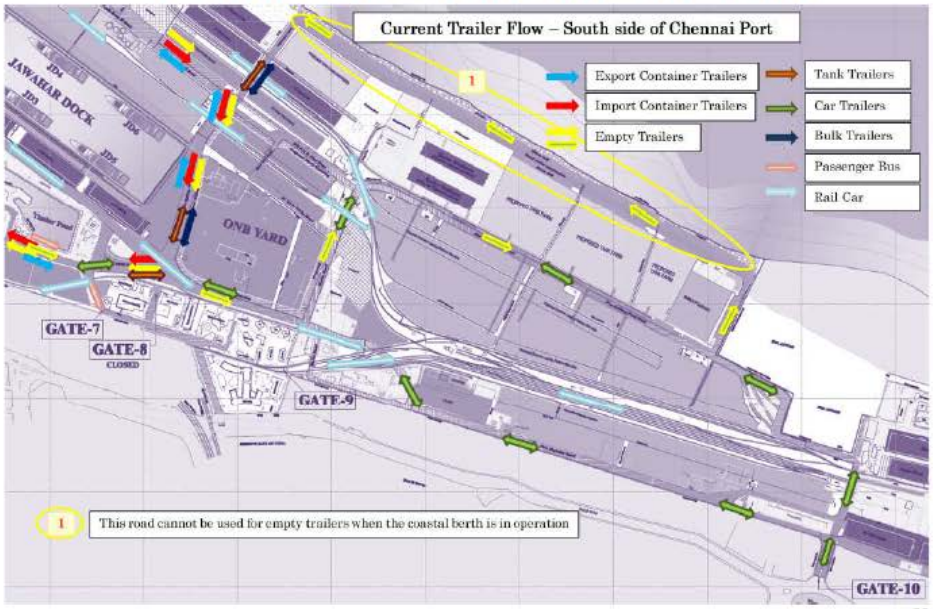
18

4. Trailer Flow inside the Port



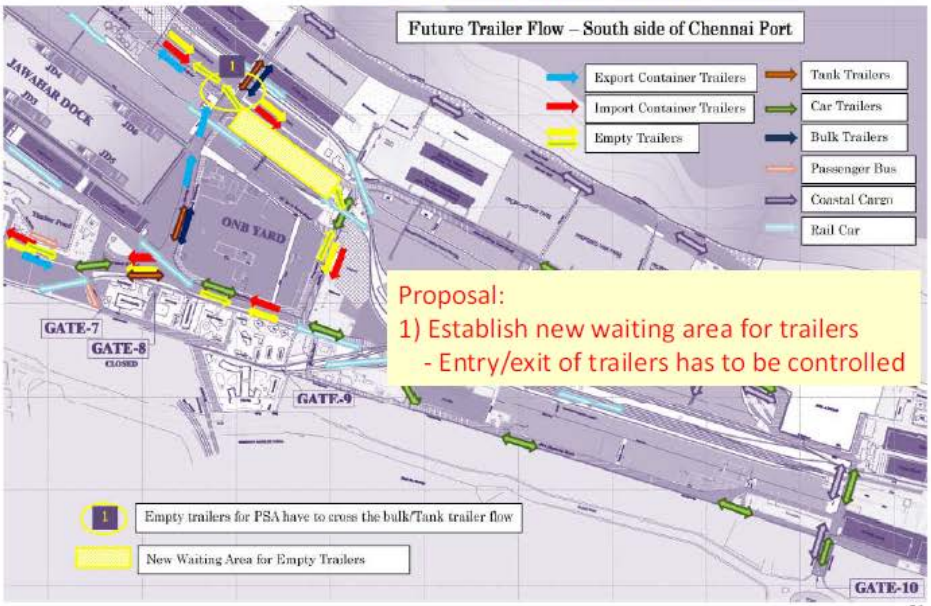
19

4. Trailer Flow inside the Port



20

4. Trailer Flow inside the Port



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III. Modernization of Port Operation (IT related Measures)

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1. Status of the RFID system

- The RFID System is in operation
  However,
  - Has it improved the efficiency of Terminal and Port gate procedures?
  - Is the information collected by the system being effectively utilized?
- ChPT is examining to Introduce RFID based Harbor Entry permit (HEP)
  - To simplify Port entry/exit procedures for drivers, assistants, etc. as well as trailers
  - Study Team will support this project

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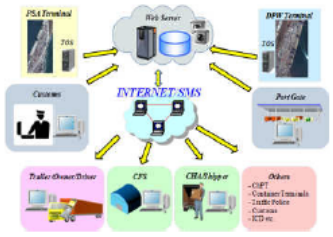
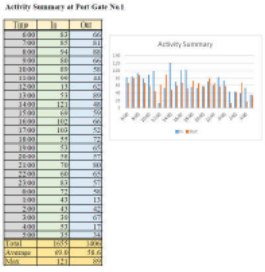
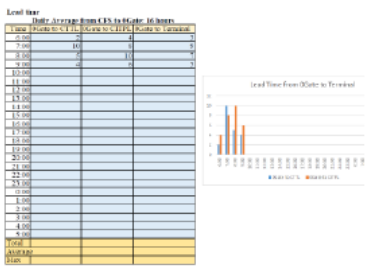
2. Trial on Web Portal System



- Trial to publish data of trailer flow collected by RFID system
  - NACFS informed us that they are ready to support the trial
  - Sample screens to be shown on ChPT's Homepage are shown below





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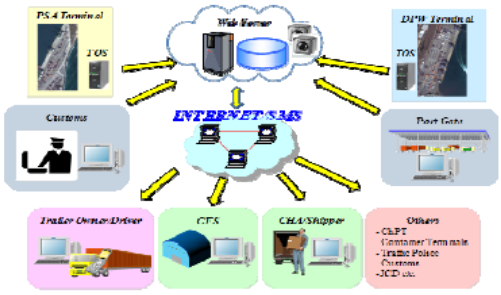
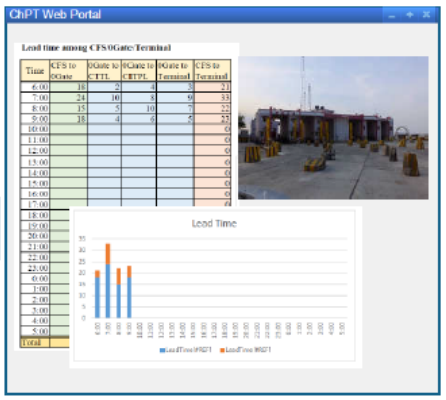
3. Proposed Projects (Ongoing)

- Introducing Web Portal





- Introducing RFID based Port entry/exit system

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3. Proposed Projects (Ongoing)

	Project Name	Purpose	Scope
A	Web Portal System	To foster cooperation among stakeholders by sharing the common indicator (KPI) which shows the degree of congestion and its improvement	1) Computer Server (Web / Database /Application, etc.) 2) Cameras and data communication equipment, etc. 3) Application Software
B	RFID based Port entry/exit system	To speed up Port entry / exit procedure as well as improve Port Security	1) Card issuing machine 2) Kiosk for entry /exit at Port gate 3) Port entry card for persons 4) RFID tags for trailers 5) Computer servers 6) Application software 7) Operational support, maintenance

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IV. Modernization of Port Operation (Infrastructure related Measures)

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1. Basic Policy for Priority Projects

- As neighboring ports have expanded their businesses in recent years, it is necessary for Chennai port to improve the efficiency of port operations, modernize facilities and enhance the port's competitiveness.
- ChPT has to overcome the following issues;
  - i) Normalization of traffic flows,
  - ii) Improvement of superannuated facilities,
  - iii) Securing sufficient space for cargo handling and storage,
  - iv) Improving efficiency of cargo handling,
  - v) Improvement of the environment,
  - vi) Accommodating larger vessels,
  - vii) Enhancement of navigational safety, and
  - viii) Securing future development space for the next generation of Chennai port.
- To overcome the issues abovementioned, priority projects will be proposed.

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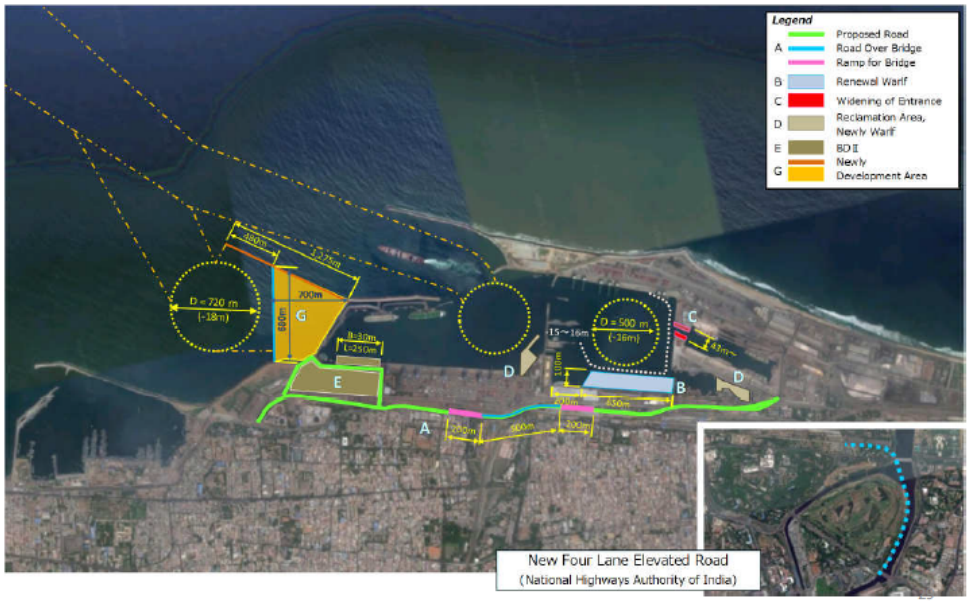
2. Priority Projects (Ongoing)



2. Priority Projects (Ongoing)

Short-Term Projects

	Project Name	Purpose	Scope
A	Realignment/Development of Internal Roads	to improve the traffic flow and ease congestion inside the Port	to develop new internal roads for separation of DPW and PSA related traffic and to introduce a flyover section of ; Option A-1: 500m in length Option A-2: 2,000m in length Option H-1: Internal roads will be inter-connected with the Maduravoyal elevated road. A study on this option is ongoing.
B	Redevelopment of Dr. Ambedkar Dock (West Wharf)	to modernize the West Wharf of Dr. Ambedkar Dock and the water area	to expand the west wharf by 600m in length and 100m in width, rearrange the cargo handling area and deepen the water area of the Dock to 15m to 16m

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2. Priority Projects (Ongoing)

Realignment of Internal Roads (Separation of DPW and PSA traffic)

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2. Priority Projects (Ongoing)

Short-Term Projects

Project Name		Purpose	Scope
C	Widening of Jawahar Dock Entrance	to improve superannuated facilities and to accommodate larger vessels	to widen the entrance of Jawahar Dock to more than 43m (effective width) in order to accommodate vessels of over-panamax class
D	Reclamation/Redevelopment of Timber Pond	to secure space for cargo and storage, improve the efficiency of cargo handling and to help normalize the traffic flow	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
E	Redevelopment of Bharathi Dock II	to secure cargo handling space and improve the efficiency of cargo handling for RO-RO vessels	to redevelop BH 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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2. Priority Projects (Ongoing)

Short-Term Projects

Project Name		Purpose	Scope
F	Improvement of the Environment inside the Port	to improve the environment of the port; specifically to reduce dust generated from cargo handling	to improve cargo handling method, to secure water and power resources, to further develop green areas, and to introduce rules on port usage
G	Expansion toward the Northern Area	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	to develop large scale berths with the depth of 18m together with handling yard, a breakwater and channel for accepting the world's largest class cruise and container vessels
H	Inter-connection of internal roads with the Maduravoyal elevated road Project	to improve the traffic flow and ease congestion inside the Port (Furthermore to ease congestion outside the port)	Option H-2: the flyover section of Option A-2 is to be connected directly with Maduravoyal elevated road (length of a flyover section is about 3.9km)

G & F : Short-Term Projects

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3. Measures to improve the Environment

By improving environmental conditions, operational efficiency can also be improved

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.

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3. Measures to improve the Environment



Measures	Basic Idea
iii) 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 toiles, etc. which are helpful to prevent diseases
v) Notification of and compliance with the rules for using port	To prepare a general rules for the usage of the port in order to keep the port in environmentally sound condition

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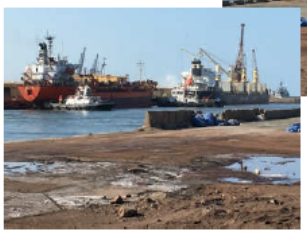
Thank you for your Attention



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