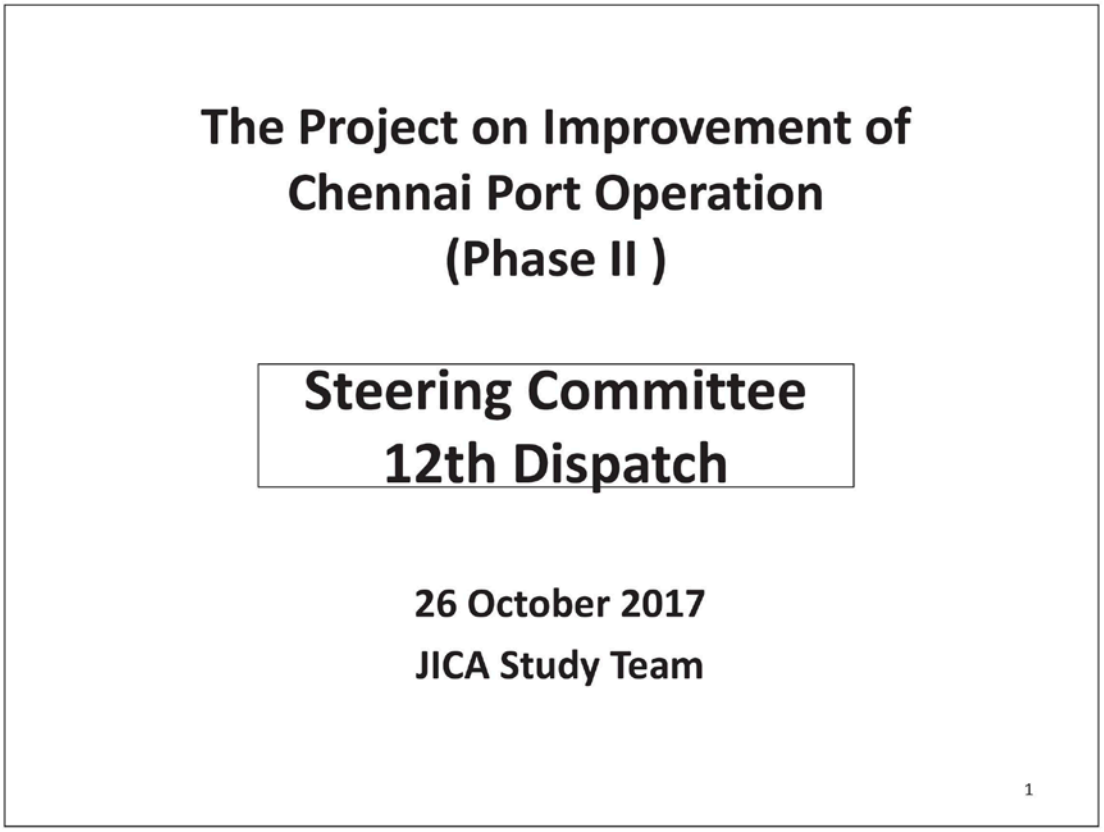
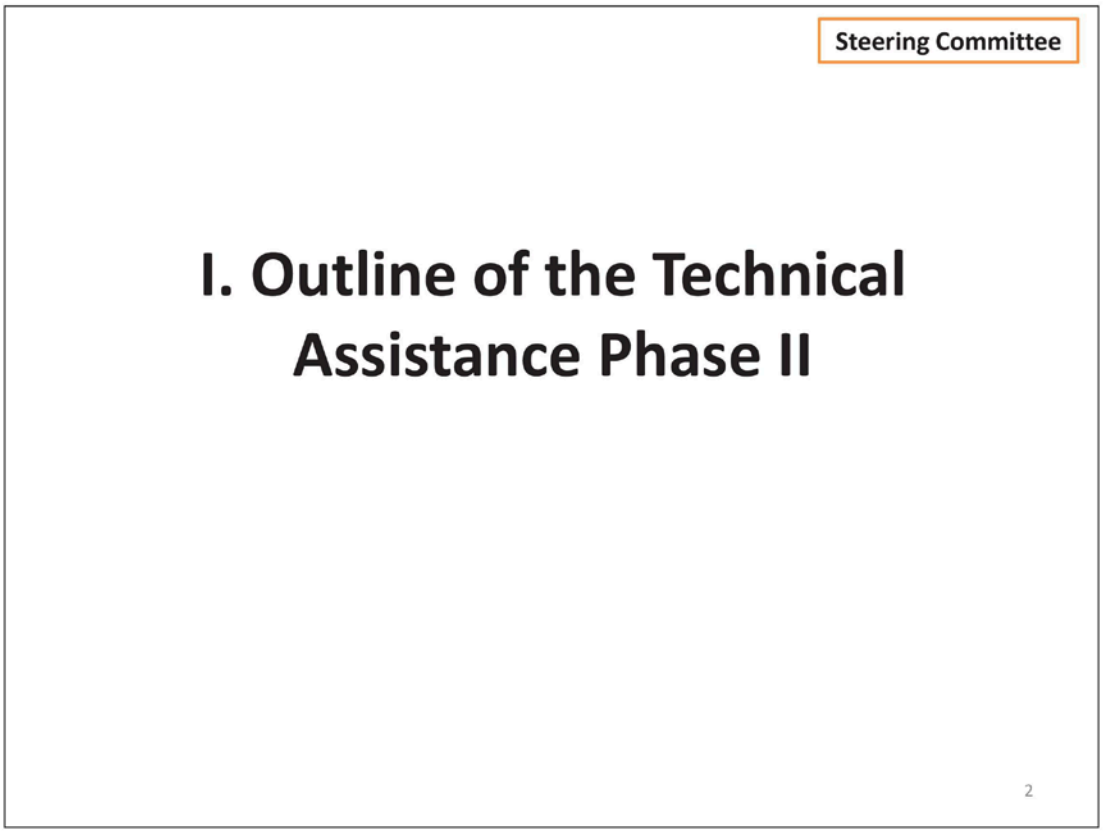
6. Steering Committee (26 October 2017)





Steering Committee

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, 12th February – Saturday, 11th March, 2017
Second （Tenth） Dispatch	Sunday, 23rd April – Saturday, 20th May, 2017
Third (Eleventh) Dispatch	Sunday, 23rd July —Saturday, 19th Aug., 2017
Fourth (Twelfth Dispatch)	Tuesday, 10th Oct. – Tuesday, 31 Oct., 2017

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Steering Committee

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.

4

Steering Committee

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

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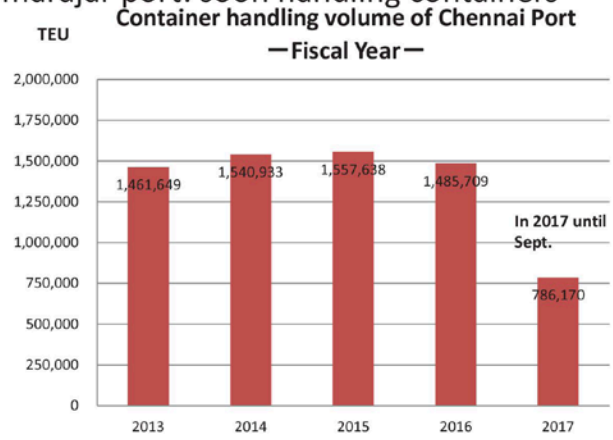
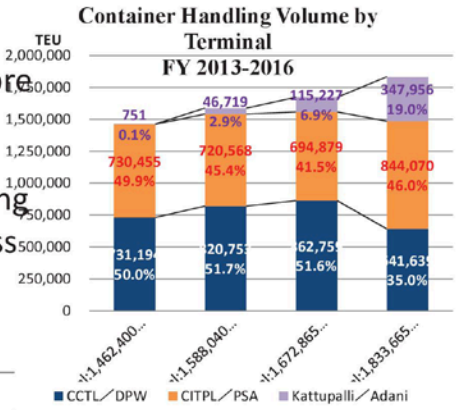
Steering Committee

1. Port Activities

- Total handling volume: decreasing slightly
- Major reason: inability to handle coal/iron ore
- Container handling: fluctuating near 1.5 M TEUs
- Container demand in entire region: increasing
- Kattupalli port: expanding container business
- Kamarajar port: soon handling containers





First half of FY2017: increased by 5.5 %

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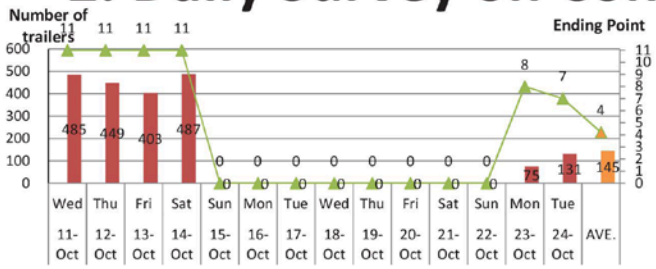
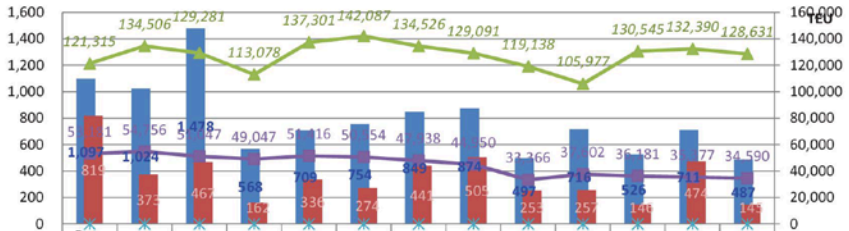
Steering Committee

2. Daily Survey on Congestion Status



Number of Queuing Trailers (from 11th to 24th Oct.)

Trend of the Number of Queuing Trailers



	Data Collection Survey	1st Dispatch	2nd Dispatch	3rd Dispatch	4th Dispatch	5th Dispatch	6th Dispatch	7th Dispatch	8th Dispatch	9th Dispatch	10th Dispatch	11th Dispatch	12th Dispatch
Maximum/day	1,097	1,024	1,478	568	709	754	849	874	497	716	526	711	487
Average/day	819	373	467	162	336	274	441	505	253	257	146	474	145
Handled Container (TEU)/Month	121,315	134,506	129,281	113,078	137,301	142,087	134,526	129,091	119,138	105,977	130,545	132,390	128,631
Reference: Export volume (Laden Container)	53,181	54,756	51,047	49,047	51,416	50,554	47,938	44,950	33,366	37,602	36,181	35,377	34,590
Export share	43.8%	40.7%	39.5%	43.4%	37.4%	35.6%	35.6%	34.8%	28.0%	35.5%	27.7%	26.7%	26.9%

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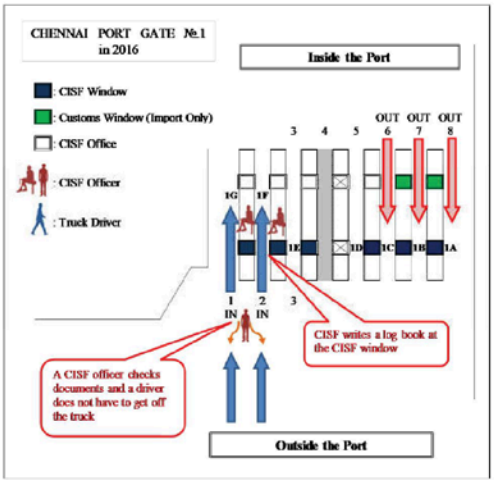
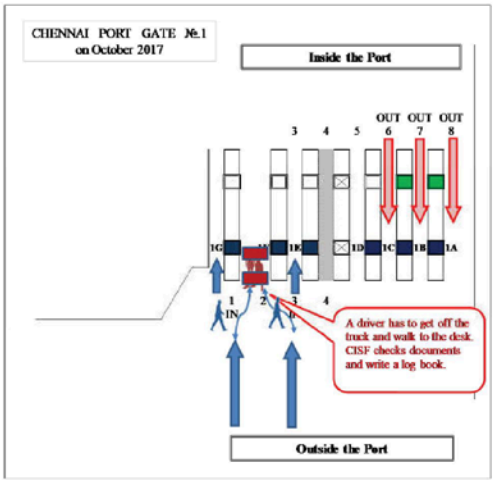
Steering Committee

3. Status inside the Port

1) Port Gate No.1





- Inefficient reception procedure was still observed
- The survey on the gate processing time is being conducted

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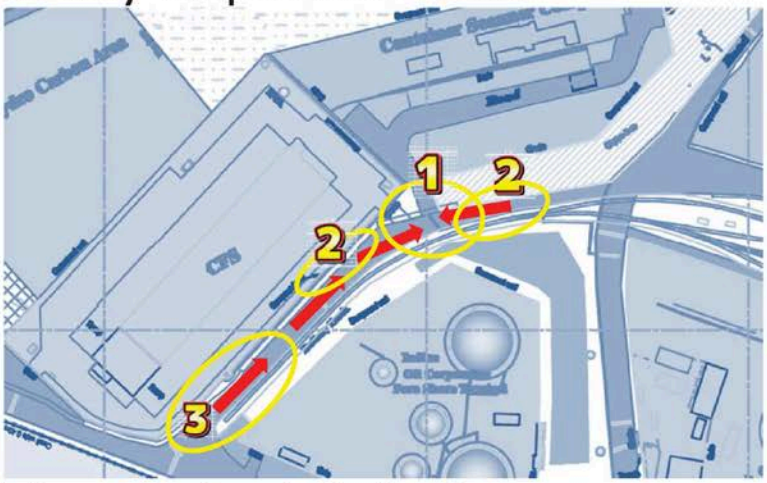
Steering Committee

4. Status inside the Port

2) X-Ray Inspection Area



1. Trailers enter from both directions
2. Some trailers parked at the entrance of the X-Ray Inspection Area
3. Trailer queue for X-Ray Inspection disrupted the export flow

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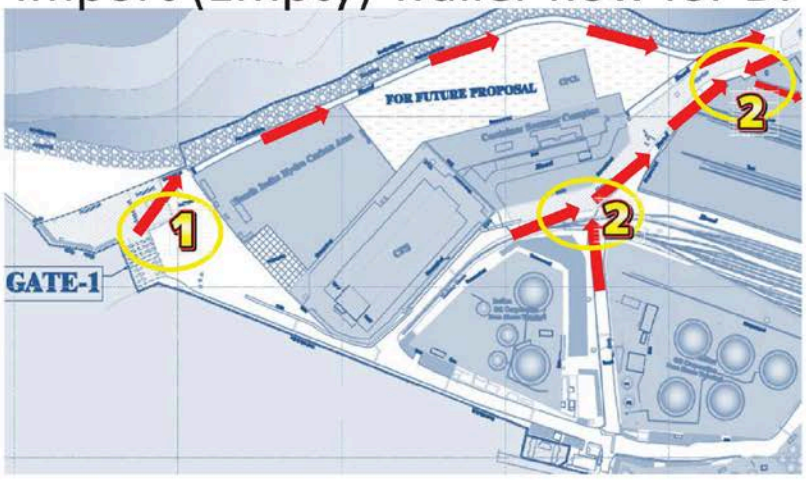
Steering Committee

4. Status inside the Port

3) Import (Empty) Trailer flow for DPW



1. Empty trailer flow overflows and reaches Port Gate No.1
2. Trailer flow towards DPW East Gate merged
3. Empty Trailer flow is not properly aligned overall

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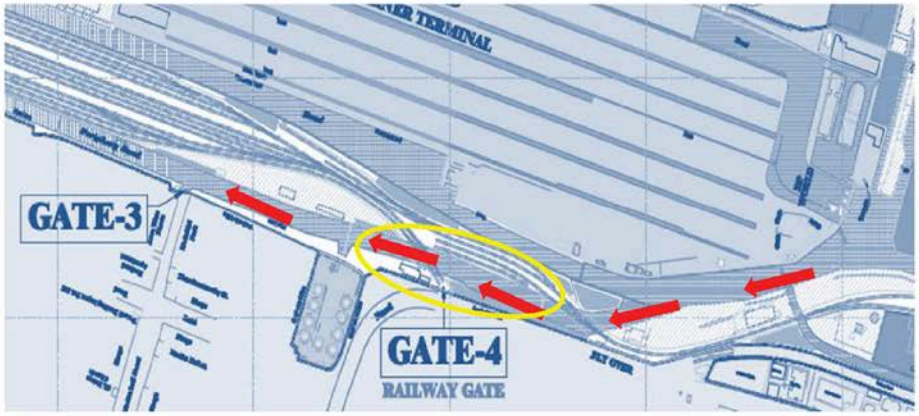
Steering Committee

4. Status inside the Port

4) Outgoing trailer flow



1. Many trailers parked on the main line of the traffic flow which disrupted normal traffic.
   Traffic control persons need to be allocated

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Steering Committee

5. Waiting Areas for Terminals

Purpose of Introducing Waiting Areas

- To alleviate the traffic congestion outside the Port
- To secure road safety including regular vehicles
- To eliminate street parking inside the Port
- Each Waiting Area has a capacity of about 100 trailers

Basic Configuration of a Waiting Area

Import / Export	Usage	Lane width	# of passing lanes	Capacity (# of trailers)
Export	For trailers ready for gate reception	4m	0	40
	For trailers waiting for the documents or CY open date	4m	1	40
	Over dimension cargo	6m		20
Import (Empty)	For trailers ready for gate reception	4m	0	40
	For trailers waiting for the documents or CY open date	4m	1	60

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Steering Committee

5. Waiting Areas for Terminals
- the case of Kattupalli Port -

- A waiting area with a capacity of 80 - 90 trailers is set up before the terminal gate.
- Document checks and other procedures are conducted here. This reduces the time spent at the terminal gate.
- In future, the port will construct an additional waiting area with a capacity of 200-300 more trailers.
- Kamarajar port also has a plan to develop a waiting area for trailers and has reserved an 8 acre area of land for that purpose.

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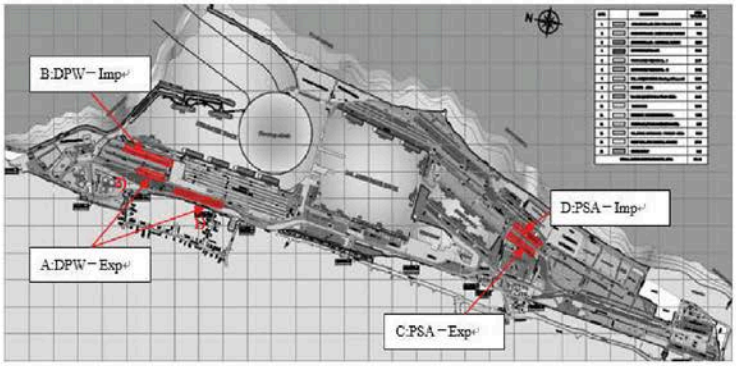
Steering Committee

5. Waiting Areas for Terminals

Candidate Locations for Waiting Areas



A : for carrying-in export containers to DPW terminal – Two options: A1 and A2
B : for picking-up import containers from DPW terminal
C : for carrying-in export containers to PSA terminal
D : for picking-up import containers from PSA terminal

Each waiting area shall have a capacity of about 100 trailers.

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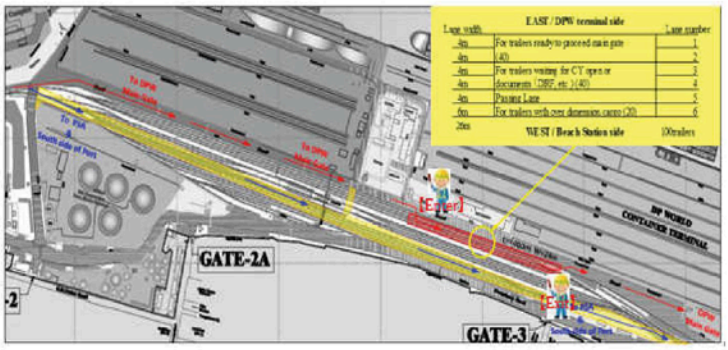
Steering Committee

5. Waiting Areas for Terminals

Waiting Area for Export Containers for DPW Terminal



Allocation of traffic control persons at the Waiting Areas

- A traffic control person shall be allocated at the entrance and exit of each waiting area.
- The traffic control persons shall instruct trailer drivers and control trailer's movement such as entry, waiting and exit in accordance with the operation rules of lanes and the operation rules of the waiting area.
- A traffic control person allocated at the entrance of the waiting area shall control trailer flow in accordance with the following operation rules.

Operation rules in the waiting areas have been prepared by the Team.

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Steering Committee

5. Waiting Areas for Terminals

Waiting Area for Export Containers for PSA Terminal

The access route for trailers is changed due to the establishment of the waiting areas.

All the trailers for PSA go to the end of ONB area and turn left along the Radio Road and then proceed to the Waiting Areas.

When exiting to go to PSA East in-gate trailers, trailers first turn right onto the eastern coastal road, passing in front of the warehouses

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III. Outcome (Evaluation) and Challenges of the Project

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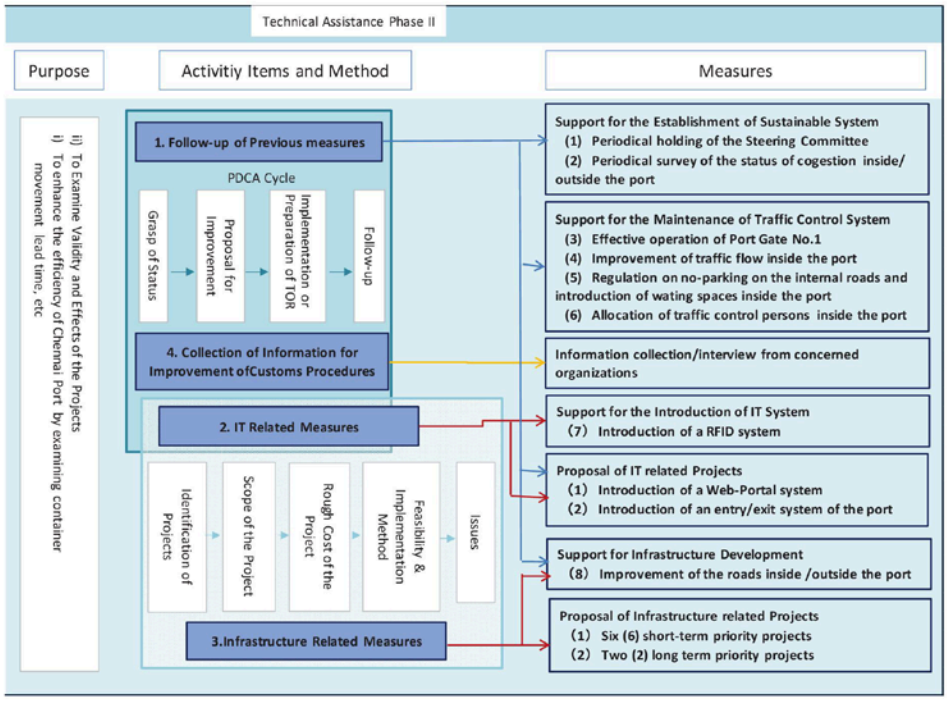
Steering Committee

1. Measures conducted during Project II



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2. Evaluation

Steering Committee

(1) Periodical holding of the Steering Committee (S/C)

S/C should be held periodically to promote the improvement of port operation.

(2) Periodical survey of the status of congestion

Item	Measure	Evaluation	Challenge
Traffic control at Manali junction	Traffic control by traffic police	Not sufficient	To secure traffic flow responding to congestion status
Setting of blocks for trailer lanes	Securing dedicated lanes for trailers	Sufficient	
Utilization of TVT-Parking	Waiting area for drivers without proper documents	Not utilized	To consider the utilization and to develop running rules
Adjustment of traffic flow by traffic police	/ Prohibition of parking at intersections, narrow section of roads, residential areas, etc. / Instructions to drivers who do not move forward despite there being space in front	Not sufficient	/ To introduce means for traffic police to communicate with each other / Strict enforcement of the no parking regulation / Continuous patrol and warnings to drivers
Improvement and widening of access Roads	Development of dedicated lanes for trailer along the access roads	In progress	Work needs to be completed as soon as possible

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2. Evaluation

Steering Committee

Changes of Congestion Points inside and outside the Port

- Starting point of congestion: No.1 (IN) & (OUT), DPW IN gate during the Phase I
- Starting point of congestion: PSA (IN) , No.1 (IN) during the Phase II
- New points: Dedicated route (section G and K) for picking up import containers.

Location			Outside Port				Inside Port									
			A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date	Week	Time	beyond 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 North Gate (without Container)	DPW Entrance – DPW Exit	DPW Exit – Port Gate 7	Port Gate 7 – PSA Entrance	Port Gate 7 – PSA Entrance (without Container)	PSA Exit – Port Gate 7	Port Gate 7 – DPW Exit	DPW Exit – Port Gate 1 (Exit)
11-Oct	Wed	11:00	long	long	long	long										
12-Oct	Thu	15:30	long	long	long	long										
13-Oct	Fri	18:30	long	long	long	long	nil	nil	nil	nil	nil	long	short	nil	nil	nil
14-Oct	Sat	11:00	long	long	long	long	nil	nil	nil	nil	long	long	long	nil	nil	nil
15-Oct	Sun	11:00	nil	short	long	short	nil	long	long	nil	short	long	long	nil	nil	nil
16-Oct	Mon	15:00	nil	nil	nil	short	nil	nil	nil	nil	nil	short	short	nil	nil	nil
17-Oct	Tue	18:00	nil	nil	nil	short	nil	short	long	nil	nil	short	short	nil	nil	nil
18-Oct	Wed	12:00	nil	nil	nil	nil	nil	long	long	nil	nil	short	short	nil	nil	nil
19-Oct	Thu	15:00	nil	nil	nil	nil	nil	long	long	nil	nil	long	short	nil	nil	nil
20-Oct	Fri	18:00	nil	nil	nil	nil	nil	nil	short	nil	nil	long	long	nil	nil	nil
21-Oct	Sat	15:00	nil	nil	nil	short	nil	nil	short	nil	nil	long	long	nil	nil	nil
23-Oct	Mon	11:00	nil	nil	nil	nil	nil	nil	long	nil	nil	long	long	nil	nil	nil
23-Oct	Mon	18:30	nil	nil	nil	long	nil	nil	long	nil	nil	nil	short	nil	nil	long
24-Oct	Tue	15:00	nil	long	long	long	short	nil	long	nil	nil	nil	short	nil	nil	short

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

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2. Evaluation

Steering Committee

(3) Efficient operation at Port Gate No.1

ChPT has to introduce a system which enables personnel to grasp any changes in operational procedure in order to solve issues generated by these changes.

(4) Improvement of traffic flow inside the Port

Area	Issues	Countermeasures
North side	Import trailers for X-Ray inspection have to cross another trailer flow at the intersection near the inspection area	To implement a new X-Ray inspection area dedicated for import containers along the traffic flow of import trailers
	Two empty trailer flows towards DPW merge	To unify empty trailer flow so that empty trailers coming from PSA join the flow at Port Gate No.1
Central	Too many types of truck and vehicle flow are mixed on a narrow road	To implement realignment/ development of internal roads
South side	The access road for coastal cargoes is occupied by empty trailers towards PSA East Gate	To establish a new waiting area for empty trailers and change the empty trailer flow accordingly

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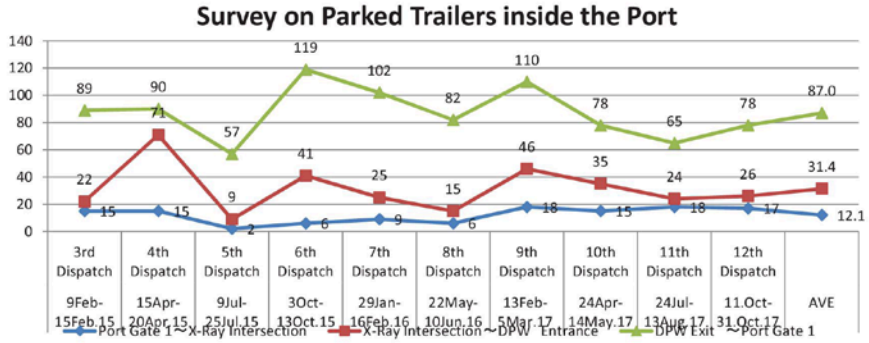
2. Evaluation

Steering Committee

(5) On-street parking ban inside the Port and establishment of a new Waiting Area

Many parked trailers are observed on the main road. They may be obstacles to securing a normal trailer traffic flow. Measures such as no parking rules should be introduced to reduce the number of parked trailers.



(6) Allocation of traffic control persons

Traffic control persons continue to be allocated.

Places where traffic control persons are to be allocated must be continuously examined and re-evaluated.

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2. Evaluation

Steering Committee

(7) Introduction of RFID system

- The RFID system could simplify the entry/exit procedure at Port gates and terminal gates.
- Neither the container terminals nor ChPT utilize the RFID system.
- Both terminals should link their Terminal Operating System (TOS) with the RFID system for improving terminal gate efficiency.
- How to use the RFID data should be examined based on the demonstration trial of the Web Portal System

(8) Improvement of road infrastructure inside/outside the Port

Road improvements and enhancement have to be continuously conducted inside/outside the Port.

Comprehensive, coordinated and sustained efforts using the measures introduced above are required to solve congestion issues.

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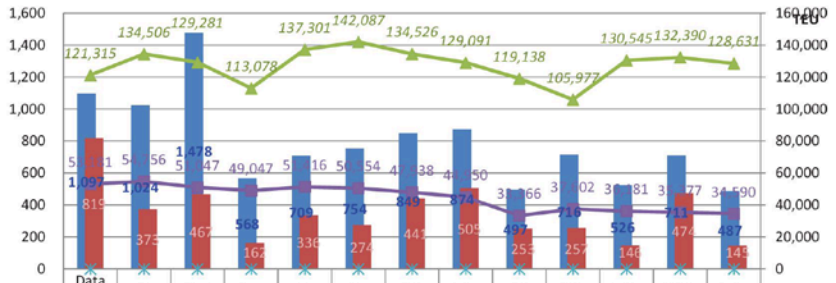
3. Objective Evaluation

Steering Committee

(1) Evaluation of measures for congestion alleviation and challenges

Many port users feel that the congestion status of Chennai port has significantly improved. However, traffic congestion still exists outside the port.
Sustained efforts in collaboration with all stakeholders are required.



	Data Collection Survey	1st Dispatch	2nd Dispatch	3rd Dispatch	4th Dispatch	5th Dispatch	6th Dispatch	7th Dispatch	8th Dispatch	9th Dispatch	10th Dispatch	11th Dispatch	12th Dispatch
Maximum/day	1,097	1,024	1,478	568	709	754	849	874	497	716	526	711	487
Average/day	819	373	467	162	336	274	441	505	253	257	146	474	145
Handled Container (TEU)/Month	121,315	134,506	129,281	113,078	137,301	142,087	134,526	129,091	119,138	105,977	130,545	132,390	128,631
Reference: Export volume (Laden Container)	53,181	54,756	51,047	49,047	51,416	50,554	47,938	44,950	33,366	37,602	36,181	35,377	34,590
Export share	43.8%	40.7%	39.5%	43.4%	37.4%	35.6%	35.6%	34.8%	28.0%	35.5%	27.7%	26.7%	26.9%

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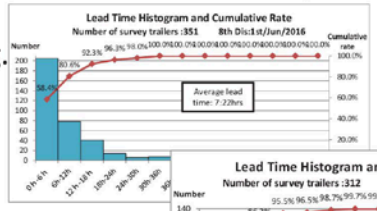
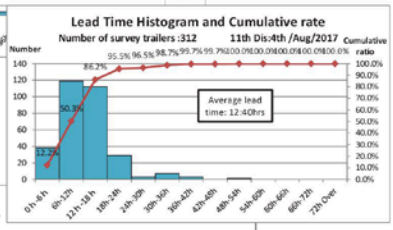
Steering Committee

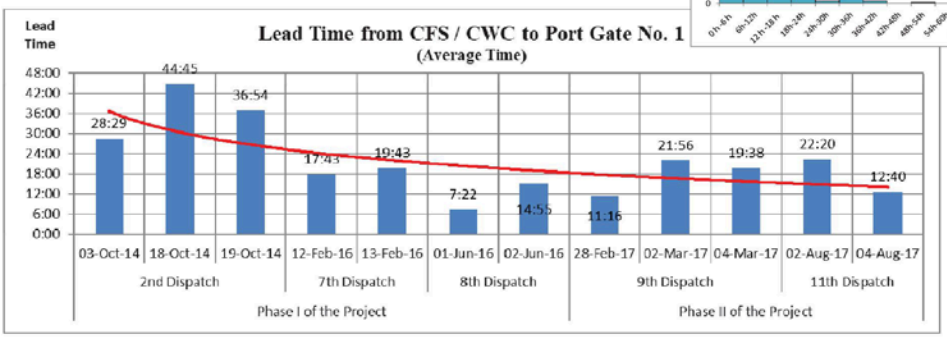
3. Objective Evaluation

(2) Evaluation of the lead time results and challenges

Lead time has been steadily decreasing. Measures should be continuously conducted.
A sustainable system should be established to tackle congestion and improve port operations.







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Steering Committee

3. Objective Evaluation

(3) Evaluation of the Web Portal System and Challenges

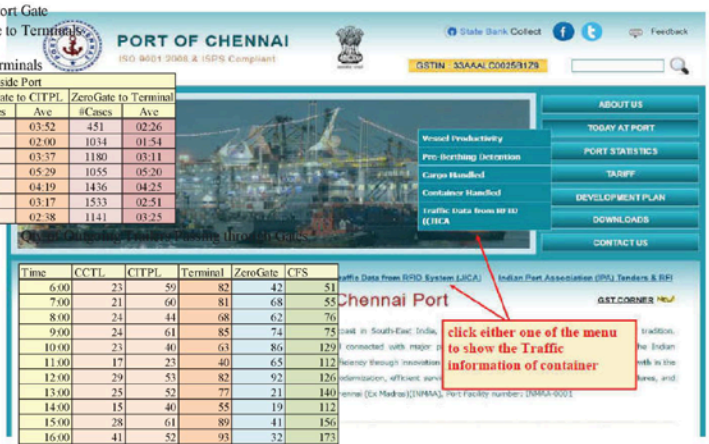
Weekly Average of Lead Time : **11:47** from CFS to Port Gate
03:27 from Port Gate to Terminals

LeadTime among CFS/Port Gate/Terminals

Date	Outside Port		Inside Port					
	CFS to ZeroGate		ZeroGate to CCTL		ZeroGate to CITPL		ZeroGate to Terminal	
	#Cases	Ave	#Cases	Ave	#Cases	Ave	#Cases	Ave
09/10/2017 (Mon)	145	04:02	260	01:23	191	03:52	451	02:26
10/10/2017 (Tue)	1031	11:32	504	01:48	530	02:00	1034	01:54
11/10/2017 (Wed)	1024	14:51	499	02:36	681	03:37	1180	03:11
12/10/2017 (Thu)	572	13:44	338	05:00	717	05:29	1055	05:20
13/10/2017 (Fri)	742	12:41	520	04:35	916	04:19	1436	04:25
14/10/2017 (Sat)	1270	12:27	613	02:12	920	03:17	1533	02:51
15/10/2017 (Sun)	868	06:43	485	04:28	656	02:38	1141	03:25

Qty of Trailers Passing through CFS/Port Gate/Terminals
Summary for 09/10/2017 (Mon)

Time	CFS	ZeroGate	CCTL	CITPL	Terminal
6:00	44	36	16	5	21
7:00	66	38	15	16	31
8:00	84	44	25	18	43
9:00	77	32	22	13	35
10:00	124	33	15	22	37
11:00	129	60	24	23	47
12:00	132	47	30	25	55
13:00	109	31	21	5	26
14:00	105	43	22	11	33
15:00	120	14	23	17	40
16:00	164	14	15	8	23
17:00	161	13	10	9	19
18:00	157	30	7	1	8
19:00	161	36	0	9	9
20:00	139	6	6	1	7
21:00	211	14	4	6	10
22:00	181	8	6	14	20
23:00	185	5	8	8	16
0:00	187	6	15	8	23
1:00	153	10	19	10	29
2:00	119	6	15	3	18
3:00	103	24	17	10	27
4:00	101	17	20	12	32
5:00	94	8	19	9	28
Total	3106	575	374	263	637
Average	129.4	24.0	15.6	11.0	26.5
Max	211	60	30	25	55



Time	CCTL	CITPL	Terminal	ZeroGate	CFS
6:00	23	59	82	42	51
7:00	21	60	81	68	55
8:00	24	44	68	62	76
9:00	24	61	85	74	75
10:00	23	40	63	86	129
11:00	17	23	40	65	112
12:00	29	53	82	92	126
13:00	25	52	77	21	140
14:00	15	40	55	19	112
15:00	28	61	89	41	156
16:00	41	52	93	32	173
17:00	31	55	86	48	160
18:00	19	45	64	38	190
19:00	24	30	54	18	202
20:00	15	20	35	35	196
21:00	22	17	39	30	182
22:00	28	19	47	65	180
23:00	16	12	28	65	178
0:00	20	21	41	30	159
1:00	33	33	66	34	118
2:00	32	38	70	58	106
3:00	34	28	62	54	80
4:00	26	48	74	52	90
5:00	27	48	75	48	69
Total	597	959	1556	1177	3115
Average	24.9	40.0	64.8	49.0	129.8
Max	41	61	93	92	202

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

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Steering Committee

3. Objective Evaluation

(3) Evaluation of the Web Portal System and Challenges

Further usage of data collected by RFID system must be examined

- Weekly Average of Lead Time for KPI on traffic congestion
- Trends of weekly average of Lead Time, Histogram of Lead Time, etc.

Weekly Average of Lead Time : **11:47** from CFS to Port Gate
03:27 from Port Gate to Terminals

LeadTime among CFS/Port Gate/Terminals

Date	Outside Port		Inside Port					
	CFS to ZeroGate		ZeroGate to CCTL		ZeroGate to CITPL		ZeroGate to Terminal	
	#Cases	Ave	#Cases	Ave	#Cases	Ave	#Cases	Ave
09/10/2017 (Mon)	145	04:02	260	01:23	191	03:52	451	02:26
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15/10/2017 (Sun)	868	06:43	485	04:28	656	02:38	1141	03:25

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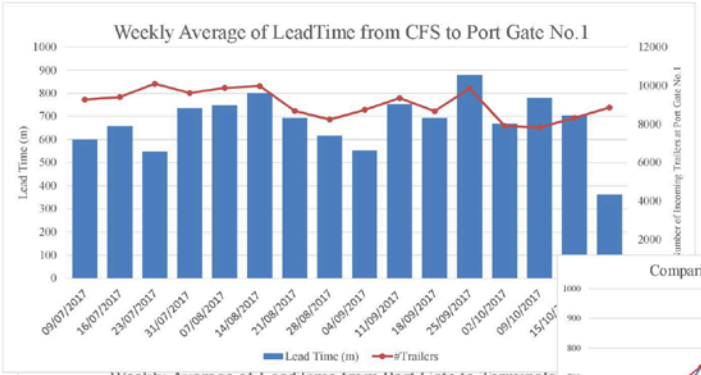
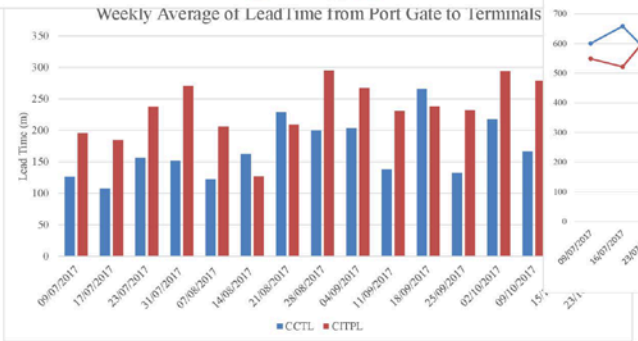
Steering Committee

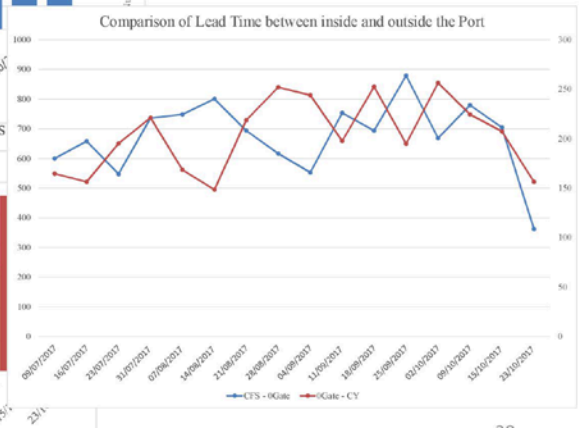
3. Objective Evaluation

(3) Evaluation of the Web Portal System and Challenges





Trends of weekly average of Lead Time



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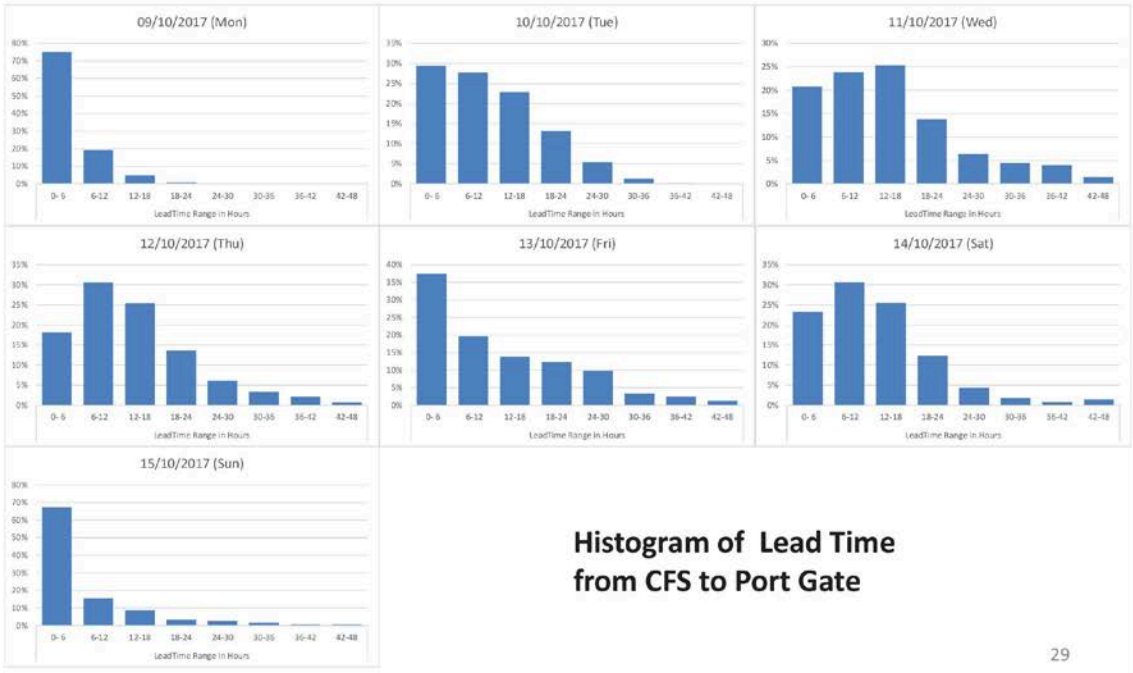
Steering Committee

3. Objective Evaluation

(3) Evaluation of the Web Portal System and Challenges



Histogram of Lead Time from CFS to Port Gate

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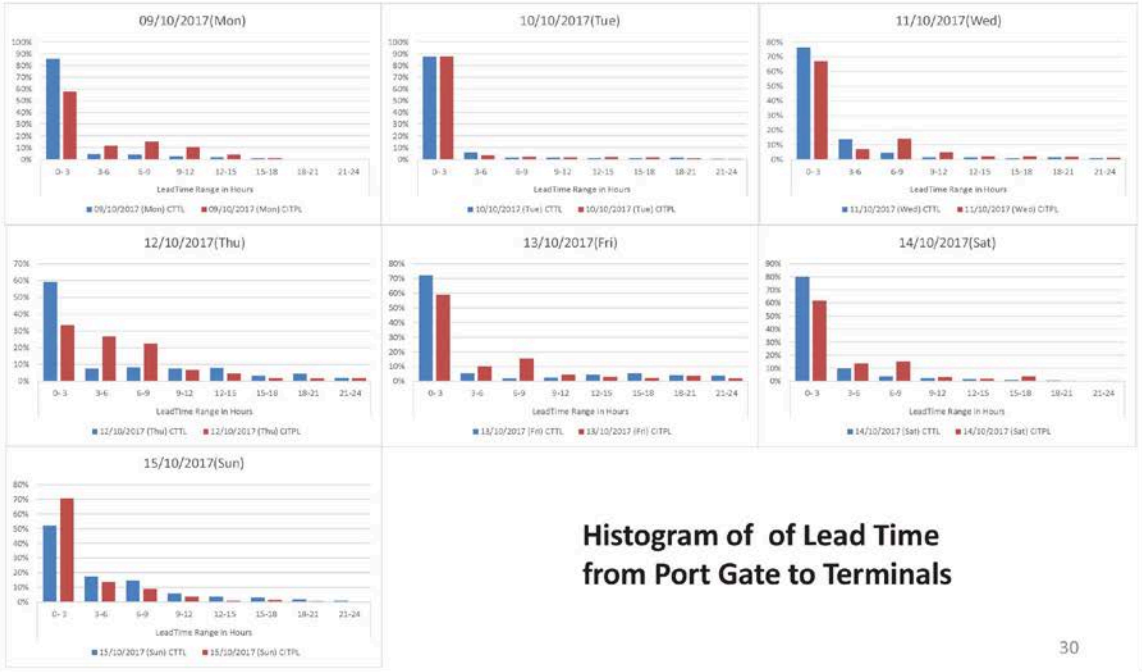
Steering Committee

3. Objective Evaluation

(3) Evaluation of the Web Portal System and Challenges



Histogram of of Lead Time from Port Gate to Terminals

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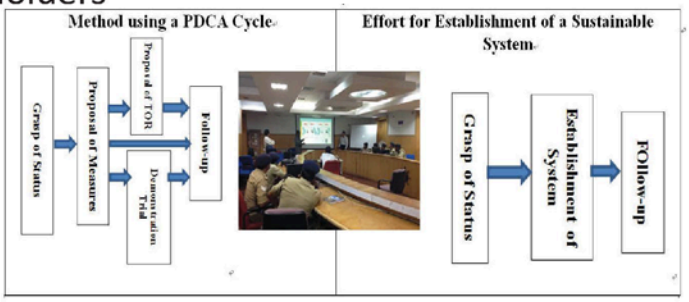
Steering Committee

4. For Establishment of Sustainable System

- Congestion phenomenon: very complicated issue
- Congestion: difficult to solve in a day
- Organizations concerned and stakeholders: need sustained efforts and sustainable systems
- Introduction of PDCA (plan-do-check-act) cycle and information sharing among stakeholders



TOR (Prepared by the Team)

1. Running Rules for the Committee for Improvement of Port Operation and Management
2. Running Rules for the Working Group for Sustainable Operation of Entry/Exit Control
3. Operation Rules in the Waiting Areas for Trailers
4. Operation Rules for Trailer Entry Process at Terminal In- Gate
5. General Rules for Port Users on Use of Port

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Steering Committee

IV. Modernization of Port Operation through Soft and Hard Measures

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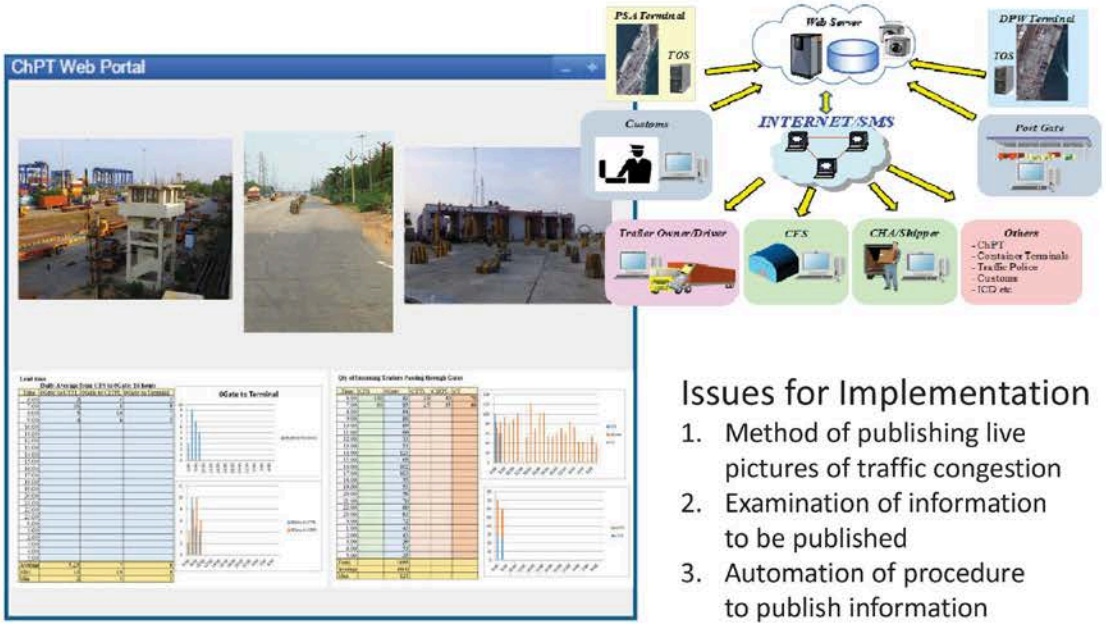
1. IT Related Project

Steering Committee

- Introduction of Web Portal System -



Issues for Implementation

1. Method of publishing live pictures of traffic congestion
2. Examination of information to be published
3. Automation of procedure to publish information

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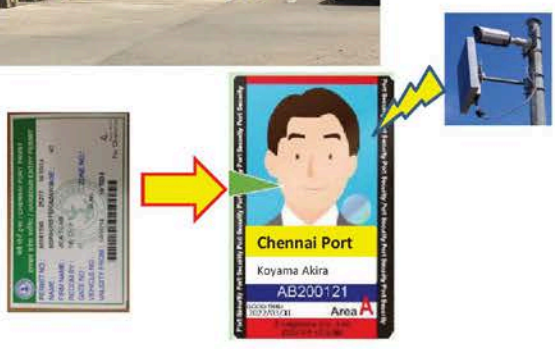
1. IT Related Project

Steering Committee

- Introduction of RFID based Harbor Entry Pass System -



Issues for Implementation

1. Examination and evaluation of the operational procedure

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Steering Committee

2. Challenges in IT Utilization

1) Examination of the leading examples
   - The applied technology
   - The development process and its schedule
   - Operational procedure
   - Development organization, etc.
2) Establishing a sustainable system
   - ChPT itself must develop a sustainable system which supports the operation of the system continuously.

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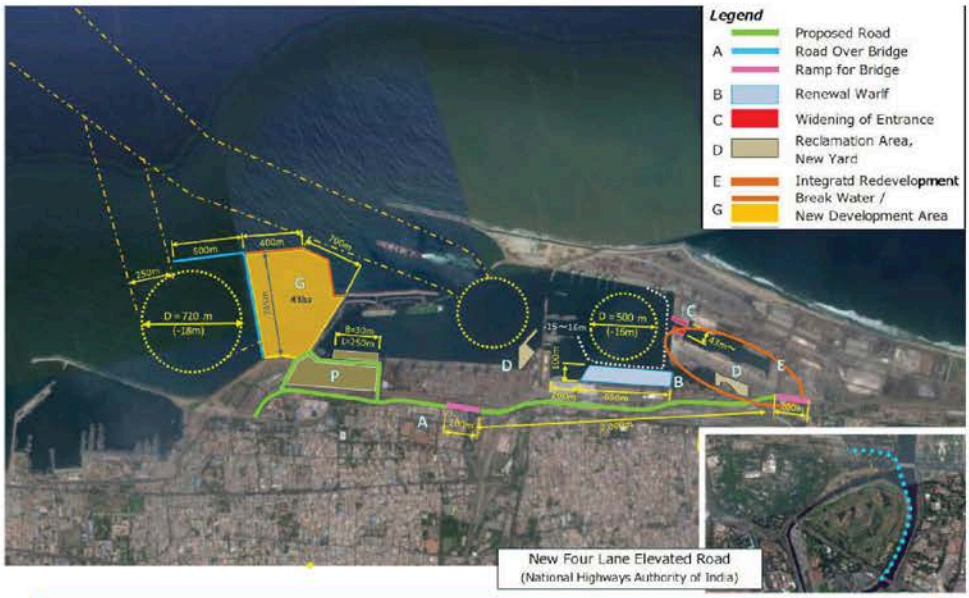
3. Priority Projects (Infrastructure)



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

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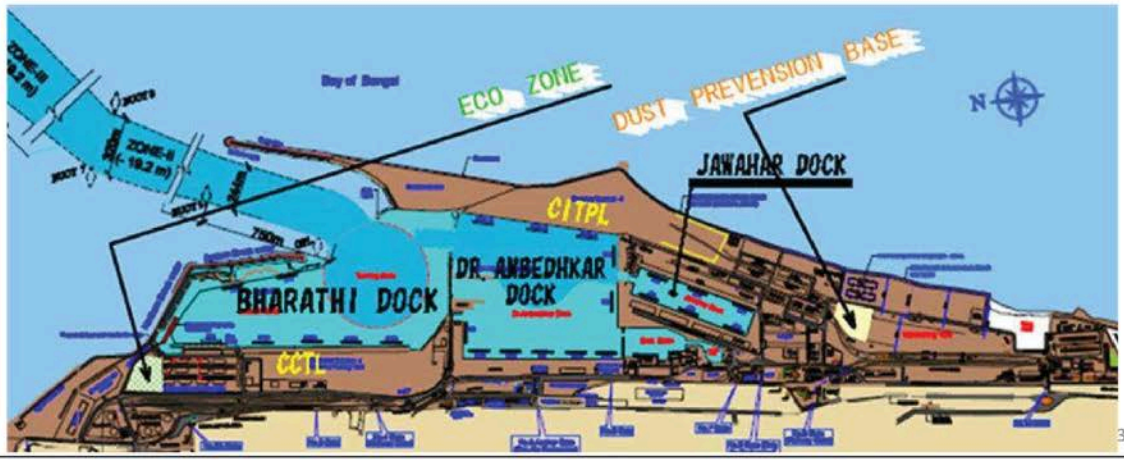
4. Improvement of Environment

Steering Committee

The team proposes the following two measures

i) Eco Zone: An area where greenery is promoted in a planned and intensive manner

ii) Dust Prevention Base: An area where certain functions are installed in order to prevent the generation of dust from cargo handling, and where cargo such as stones are stored.



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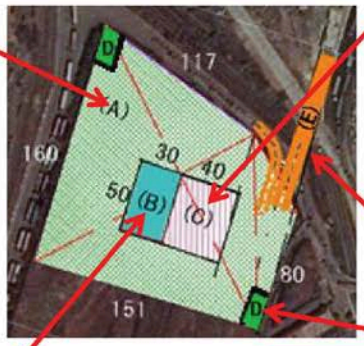
4. Improvement of Environment

Steering Committee

i) Eco Zone

A) Green Pavement



C) Shed with Solar Panels on the Roof

E) Flyover

B) Desalination Device

D) Wind Generator

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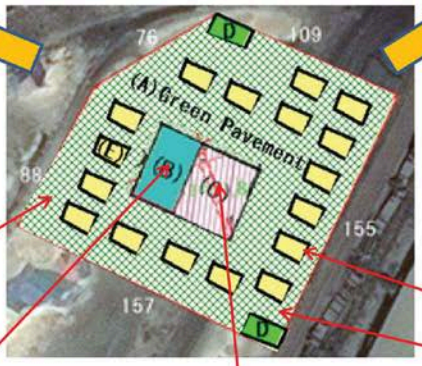
4. Improvement of Environment

ii) Dust Prevention Zone

- In order to clean roads and aprons, a maintenance vehicle that draws dust and another one that sprinkles water are deployed.

Vehicle to Draw Dust



Vehicle to Sprinkle Water

E) Cargo Storage

A) Green Pavement

B) Desalination Device

C) Shed with Solar Panels on the Roof

D) Wind Generator

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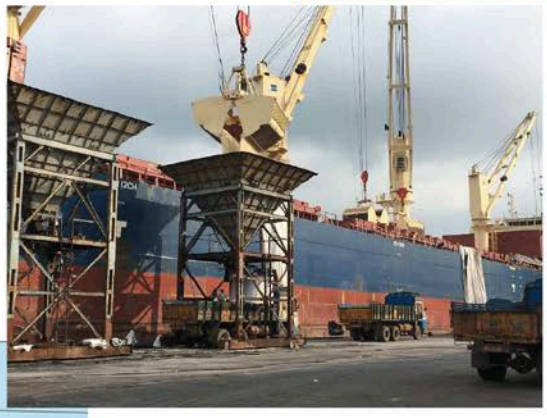
Steering Committee

Thank you for your Attention



Kattupalli Port

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