



# PAT'S GREEN INITIATIVE



February 7, 2014



# resentation Outline

## Overview of PAT

### PAT's Green Initiative



# Port Authority of Thailand (PAT)



# erview of PAT



- > An autonomous government agency under the jurisdiction of the Ministry of Transportation (MOT)
- > 5 ports under the good governance of PAT including Bangkok Port, Laem Chabang Port, Chiang Saen Commercial Port, Chiang Khong Port and Ranong Port
- > 1 River port, 1 International deep sea port and 3 Regional ports
- > Operate 4 ports, only Laem Chabang Port is **landlord port**

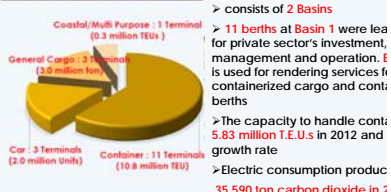


**Bangkok Port (BKP)**  
 > Land area: Total of 941 Acres, only 342 Acres are utilized for Port  
 -consists of 2 Cargo operation areas: West and East Quay  
 > Inland location limits access to ships of 1.34 million T.E.U.s/year  
 > West Quay is used for container general cargo and domestic/international berth

Quay is used for rendering services for containerized cargo and liner berths with 2 container terminals.  
 Services: Outbound Container Freight station (CFS), Open Stuffing Area tefer Container  
 Handling the quality of loaded container not over 1.34 million T.E.U.s / year  
 Capacity: up to ships up to 12,000 deadweight tonnes or less  
 Mechanical Handling Equipment

Item	Quantity (Unit)	Item	Quantity (Unit)
Mobile Crane	14	Mobile Crane	8
Tyred Crane	38	Forklift Truck	212
Motor Truck	1227	Motor Truck	45
Reach Stacker	110	Reach Stacker	23
Tug Boat	31	Tug Boat	9

**Laem Chabang Port**  
 > Sharing of 70% of sea transp volume  
 > Thai government tries to promote as the main trading gateway to Indochina with the future expansion phase 3  
 > consists of 2 Basins  
 > 11 berths at Basin 1 were leased for private sector's investment, management and operation. It is used for rendering services for containerized cargo and container berths  
 > The capacity to handle containerized cargo is 5.83 million T.E.U.s in 2012 and growth rate  
 > Electric consumption produced 35,590 ton carbon dioxide in 2012



Mechanical Handling Equipment

Item	Quantity (Unit)	Item	Quantity
Rail-Mounted Gantry Crane	42	Mobile Crane	3
Rubber Tyred Gantry Crane	113	Forklift Truck	67
Tractor for Container	284	Motor Truck	45
Container Chassis	300	Reach Stacker	21
Top Loader	28	Tug Boat	7

# onal Ports



**Chiang Saen Commercial Port**  
 Located alongside the Mekong River in the north of Thailand  
 Consists of 2 pontoons, which is 12 m. and a roofed gangway of 6x30 m.  
 Pontoons can accommodate 4 barges  
 2 terminals can accommodate 20 berths  
 Handling Equipment and Facilities

Item	Quantity
Crane	3
Truck	4
Plugs	20



**Chiang Khong Port**  
 > Adjacent to the Mekong River, opposite to Lao PDR (Houay Xai District of Bokeo Province)  
 > Enhancing the efficiency of import-export services and promoting border trade between Lao PDR and Thailand  
 > 22 x 208 meters quayside terminal  
 > Accommodates 3-5 motor vessels of up to 80-150 gross tonnage



**Ranong Port**  
 > consists of 2 berths  
 > A multi purpose berth with a 26 x 134 m., Accommodate 2 barges with maximum load 500 gross tonnage Mechanical Handling Equipment and Facilities  
 > The container berth with 30 x 150 m., Accommodate one cargo vessel of 12,000 T

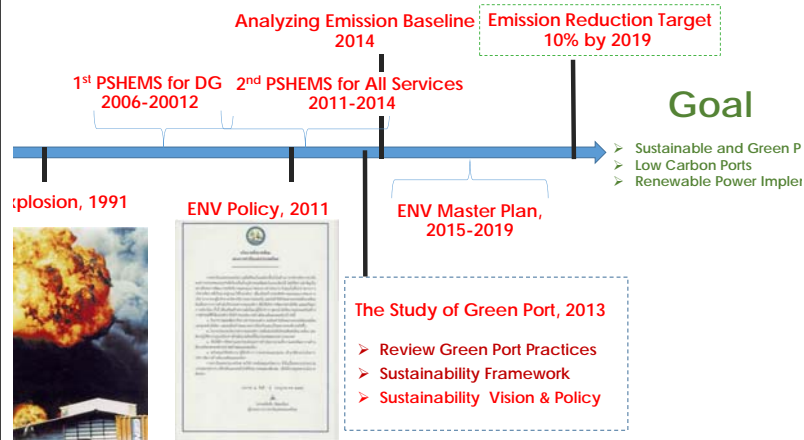
Mechanical Handling Equipment and Facilities

Item	Quantity
Mobile Crane	1
Forklift Truck	7
Rubber Tyred Mobile Harbour Crane with the capacity of 63 metric tonnes	20
Top Loader	2
Reach Stacker	1
Tractor for Containers	10
Multi-Purpose Trailer	2

## PAT's Green Initiative



## PAT's Environmental Management Timeline



## Explosion in DG warehouse: The Sudden Awakening



- In March 1991, a chemical explosion occurred in Dangerous Goods warehouse in Bangkok Port.
- A SHE management system was given top priority.
- In March 2005, Port Safety, Health and Environmental management System (PSHEMS) was introduced.

Scope of BKP PSHEMS recognized by PEMSEA	Effective years of coverage
Service for Handling of Dangerous Goods	December 2006-2009 November 2009-2012
All Service of Bangkok Port	August 2011-2014

## PAT's Environmental Policy

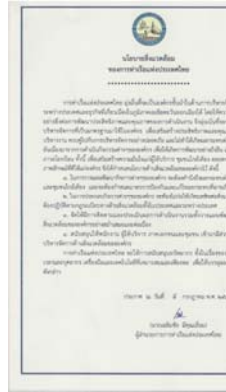
Environmental policy was issued in July 8<sup>th</sup>, 2011.

development of business plans and port-related activities must consider potential and possible impacts on the environment and local communities. Necessary approaches shall be focused on preventive and mitigation measures that reduce the impacts.

port-related activities must not affect the environment and must also comply with federal environmental regulations and relevant international conventions.

Environmental monitoring and impact assessment programs must regularly and continuously be conducted to minimize potential impacts.

Port personnel, port users and residents near the ports shall be encouraged to participate in PAT's environmental management programs.



## PAT's Greenport Projects

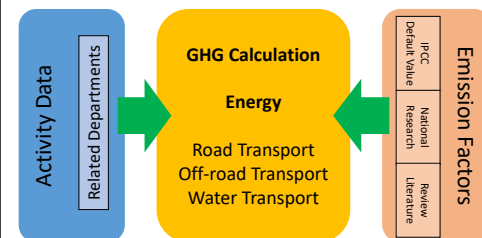
**Project Name:** the development of PAT's environmental master plan and estimation of emission baseline (2014)

- Objective:**
- prepare the GHG inventories and identify the port activities that cause GHG emissions
  - analyze emission baseline using 2013 as the base year
  - develop PAT Environmental Master Plan for 2015-2019
  - identify an emission target

**Area:** 5 ports under the good governance of PAT (Bangkok Port, Laem Chabang Port, Saen Saeng Commercial Port, Chiang Khong Port and Ranong Port)



## Conceptual Framework of GHG Inventory



**Guideline:** 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Tier 1)

**GHG:** Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>) and Nitrous oxide (N<sub>2</sub>O)

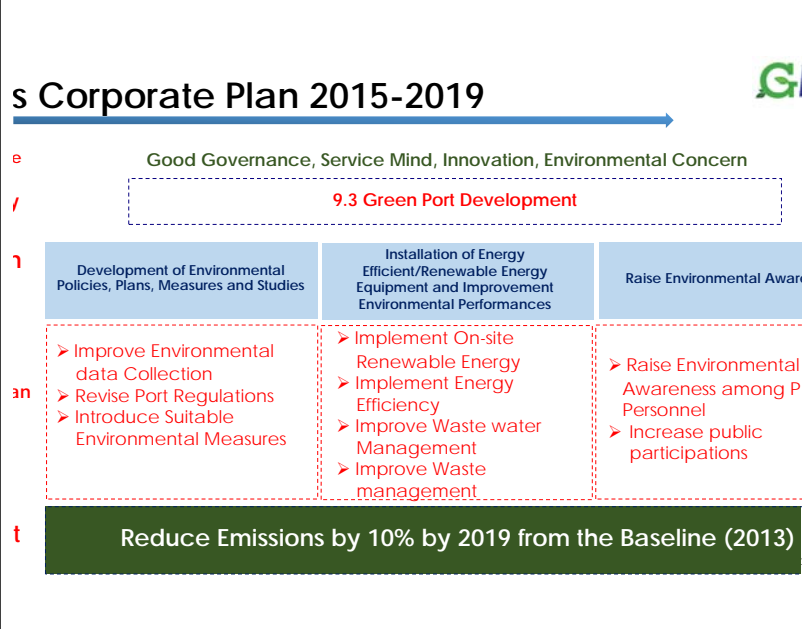
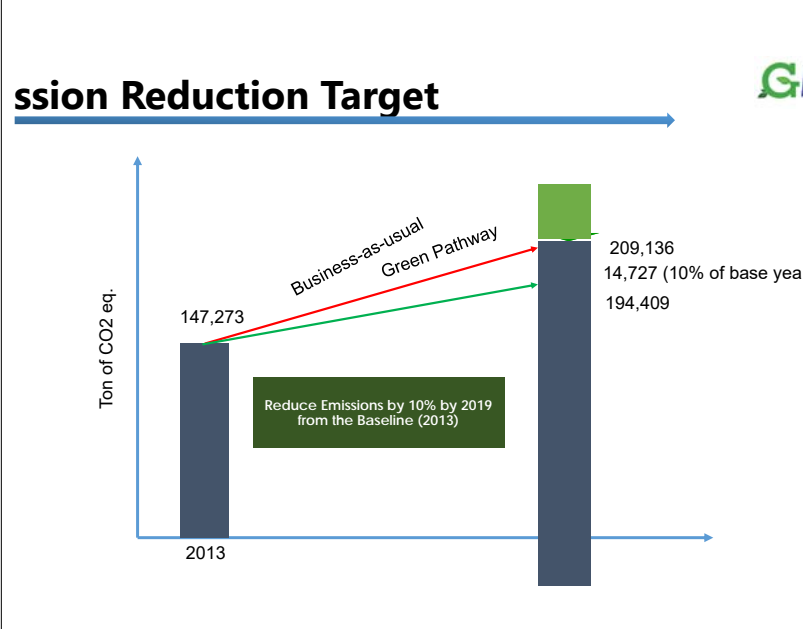
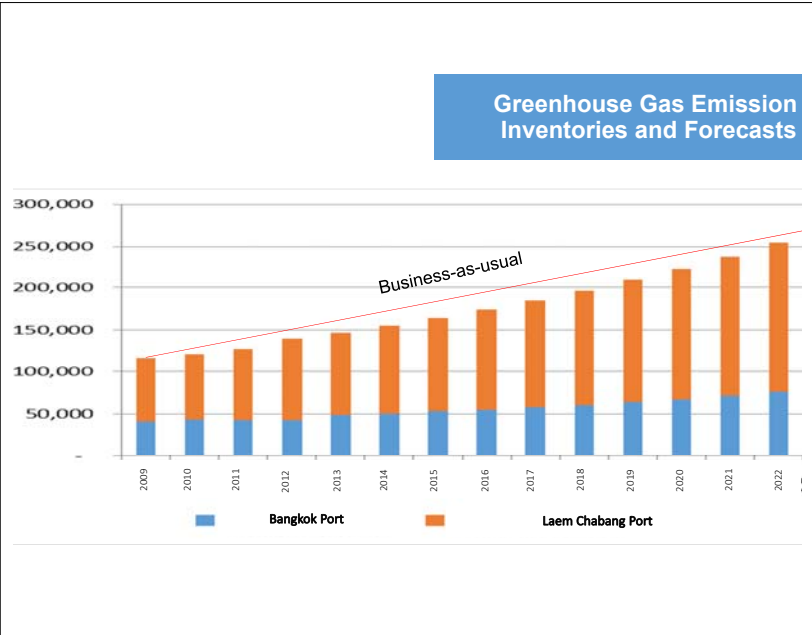
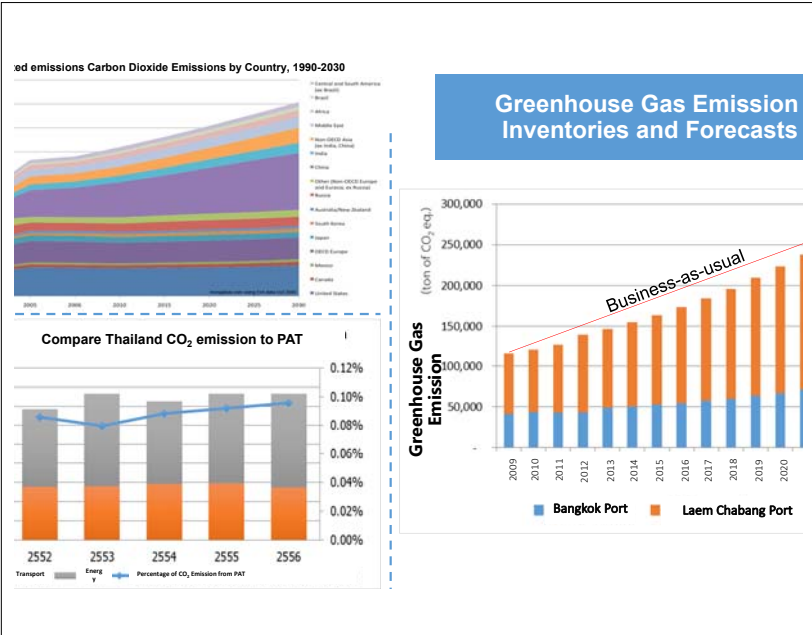
**Sectors:** Energy - Road Transport, Off-road Transport and Water Transport

**Time Period:** 2009-2013



$$GHG\ Emissions = \sum_a [Fuel_a \cdot EF_a]$$

- where:
- GHG Emissions = Emission in kg
  - EF = Emission factor (kg/TJ)
  - Fuel = Fuel consumed (TJ)
  - a = Fuel type a (e.g., diesel, gasoline, natural gas)



### Environment projects

- Increasing Air Emissions of Cargo Handling Equipment Project**
  - Replace 3.0 Metric Ton Diesel Forklifts to electric ones
  - Install electric quay cranes
  - Install energy-saving equipment for RTGs
- Energy Efficiency Project**
  - Replace of ordinary light to LED for street light and office building
  - Install solar panels in the four sides of a cubic buoy
  - Install solar panel on the water level station
- Continuously monitoring reporting and verification project**
  - Implement Environmental management Information Systems (EMIS)

### Environment projects

- Participate in Sustainable Port Development in the ASEAN Region project, supported by...
- Waste Management System in Bangkok Port, MARPOL Annex 5 Compliance
- Carbon Sink Plantation Projects
  - Reforestation of near-port areas
- Safety, Health and Environmental Management System (PSHE-MS)
  - Bangkok Port: 3<sup>rd</sup> PSHEMS for All Services on March 2015
  - Laem Chabang Port: on the process of recertification



## Environmental Programs and Projects



- measurement of black smoke
  - Cooperate with Department of Land Transport (twice a year)
  - Measure carbon monoxide, hydrocarbon and noise levels from the PAT's vehicles
- Monitor and Survey
  - Environmental Quality Monitoring Program
    - regular monitoring
    - Parameters: Ambient Air Quality, Noise Level, Waste Water, River quality
  - Environmental Surveillance Program
    - Monthly Surveillance



## Trainings & Workshops



### Management and executive

- Gain fresh perspectives on broader economic environmental and societal challenges
- Understand the role and direction of PAT towards sustainable development and green economy

### Personnel

- Raise awareness of environmental issues and possible impacts related port performance

### Workshop for Environmentally responsible personnel

- Learn more about new technologies and invention



## Partnership between PAT and the City of Yokohama



A partnership between PAT and the City of Yokohama to support PAT to promote "Green Port Project" and increase the possibility for PAT to achieve the goal of Green Port Project.

The City of Yokohama and Yokohama Port Corporation will utilize their knowledge and experiences about carbon reduction gained through environmentally friendly measures introduced at the Yokohama port.

Proposed projects are such as installation of solar rooftop on the warehouse, implementation of environmentally friendly technologies like electronic cranes and hybrid RTG etc.



Thank you for your kind attention

