



**Asia-Pacific  
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Session 3

## **Operationalizing Green Supply Chain Through Green Freight and Logistics**

Submitted by: Clean Air Asia



**Seminar on APEC Model E-Ports  
Beijing, China  
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# Operationalizing Green Supply Chain through Green Freight and Logistics

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## Outline



- Introduction
- What is Green Freight and Logistics?
- 'Safe, Secure...and Green'
- Next steps: Green Logistics to Green Supply Chain

## Our Mission

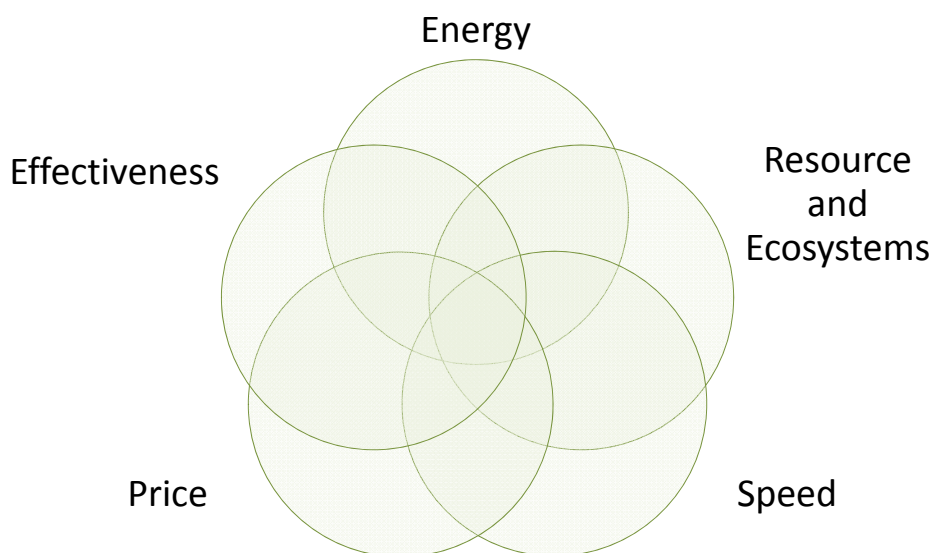


**To promote better air quality and livable cities by translating knowledge to policies and actions that reduce air pollution and greenhouse gas emissions from transport, energy and other sectors.**



Clean Air Asia was established as the premier air quality network for Asia by the Asian Development Bank, World Bank and USAID in 2001, and has operated since 2007 as an independent non-profit organization.

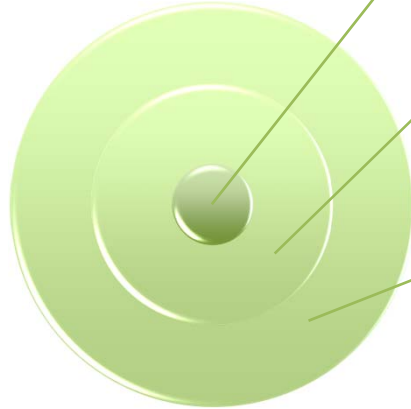
## What does "Green" Mean?



## What is Green Freight and Logistics?



Green Freight and Logistics in the context of Green Supply Chain under Global Value Chain



**Green Freight**  
(Vehicle, fuel, service and operation improvement)

**Green Logistics**  
(Overall Freight systems improvement – avoid or minimize travel and storage, shift to efficient modes, upgrades on performance and efficiency)

**Green Supply Chain**  
(Integration of freight and logistics into commodity and product lifecycle; Best Socioeconomic I/O = Most Sustainable)

## Trends and Directions of Freight and Supply Chain



**Demands:**

- Demand for greater environmental transparency through supply chains
- Demand for product safety and quality
- Security of shipments

**Solutions:**

- End-to-end traceability of products
- Verified chain of custody of shipments



## Environmental Considerations and Transparency

### Particulate matter is killing millions



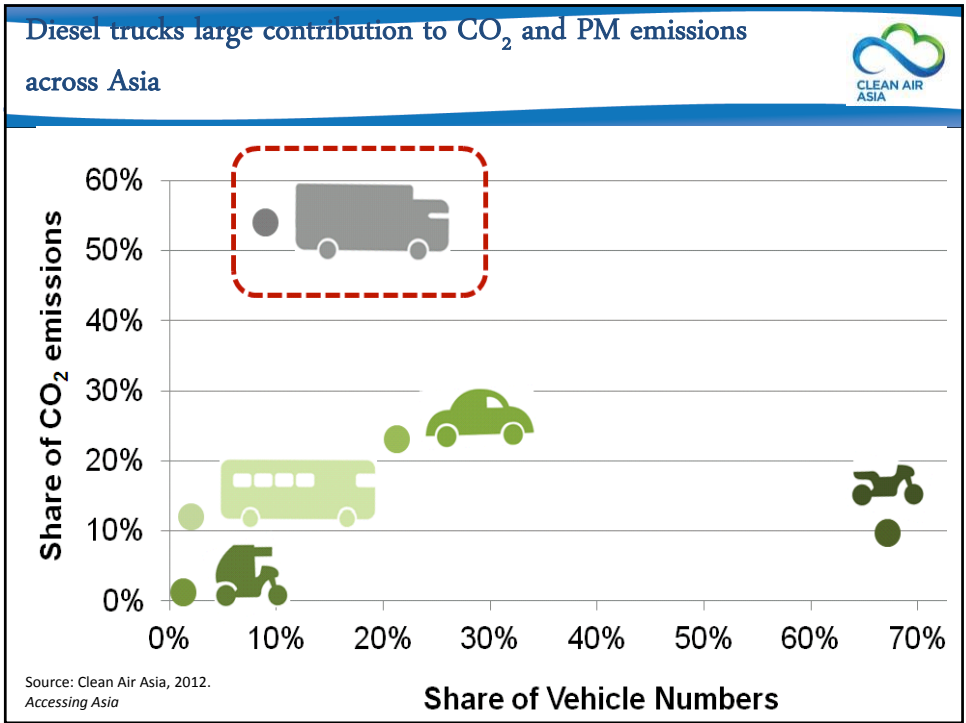
900+  $\mu\text{g PM}_{2.5}/\text{m}^3$

30+ ppm  $\mu\text{g PM}_{2.5}/\text{m}^3$



“Outdoor air pollution ranked 4<sup>th</sup> in mortality and health burden in East Asia (China and North Korea) where it contributed to 1.2 million deaths in 2010” --Health Effects Institute, Based on Global Burden of Disease Report

Image source: The Atlantic. [HTTP://www.theatlantic.com/infocus/2013/01/chinas-toxic-sky/100449](http://www.theatlantic.com/infocus/2013/01/chinas-toxic-sky/100449)




### GEF Guangdong Green Freight Demonstration Project

Budget: USD 14 Million, 1200 trucks

Main goal of this project is to reduce the road freight emission in Guangdong Province by **10%** i.e. direct reduction of **165,989** tons of CO<sub>2</sub>e emission each year.

- 38,650** tons are reduced through the demonstration of green freight truck technology
- 55,270** tons of reduction volume is realized through the “drop and hook transport” project
- 72,069** tons of emission reduction is realized through the logistics transaction information platform.



1. The total fuel savings amount to **approx 64 million liters of Diesel = RMB 496 million in cost reduction over 1200 trucks (@RMB 7.76 per liter diesel) ~USD 81 million**

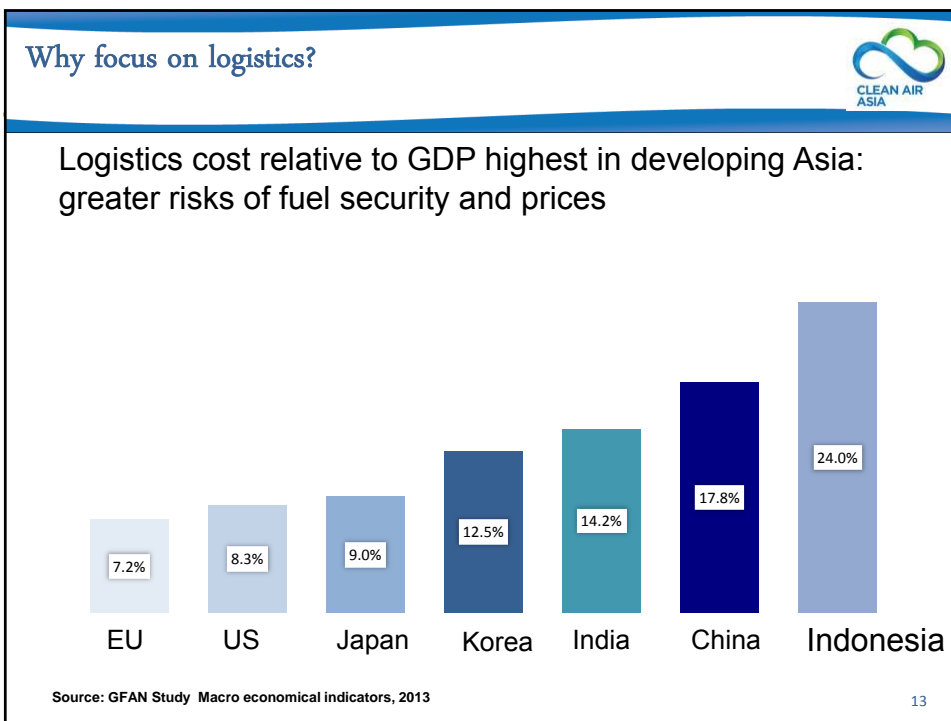
## Green Freight and Logistics Programs Across Asia

The map displays various green freight and logistics programs across Asia. Key programs include:

- CGFI (China Green Freight Initiative)**: Located in China, featuring a green truck icon and the text "中国绿色货运倡议".
- GREEN FREIGHT INDIA**: Located in India, featuring a stylized orange and red logo.
- GREEN FREIGHT ASIA**: Located in Southeast Asia, featuring a green leaf icon.
- SMART FREIGHT CENTRE (CACC)**: Located in the bottom left, featuring a stylized 'S' logo and the text "CLEANER AND CLEANER AIR QUALITIES FOR PEOPLE, BUSINESS AND OUR PLANET".
- ADB (Asian Development Bank)**: Located in the top right, featuring a blue globe icon.
- UNCRD (United Nations Centre for Regional Development)**: Located in the center right, featuring the UN logo.
- APEC (Asia-Pacific Economic Cooperation)**: Located in the bottom right, featuring a blue globe icon.
- Other logos**: Includes the ASEAN logo, the Japanese text "アジア太平洋経済圏 グリーン物流パートナーシップ", and the "CLEAN AIR ASIA" logo in the top right corner.

## Logistics and Inventory Considerations

The slide features the "CLEAN AIR ASIA" logo in the top right corner, which consists of a stylized green and blue infinity symbol above the text "CLEAN AIR ASIA".



### Why focus on logistics?

**Logistics:**

- For some industries, are a primary determinant of final quality of products
- Are always a primary determinant of sustainability and final outputs of industry (in the context of GVC)

**SUPPLY CHAIN UNPREDICTABILITY IS THE MAIN CONTRIBUTOR TO LOGISTICS COSTS IN VIETNAM**

Slower delivery means lower competitiveness, requires more inventory, more operational costs,

<b>35</b> km/h	<b>17</b> years	<b>3</b> days
AVERAGE TRUCK SPEED IN VIETNAM'S HIGHWAYS	AGE OF THE AVERAGE FREIGHT TRUCK IN VIETNAM - COMPARED TO 7 YEARS IN NORTH AMERICA	CUSTOMS CLEARANCE DELAY IN VIETNAM COMPARED TO THE BEST PRACTICE IN SOUTHEAST ASIA

➔

\$100

million

AVOIDABLE INVENTORY COSTS INCURRED BY FIRMS ANNUALLY

Older trucks mean more pollution, more breakdowns, more fuel consumption, more financial & opportunity costs

Longer clearance times means more damage or spoilage, more need for inventory, and more goods shipped to serve the same market

Source: Blancas, et al. 2012



## Why focus on logistics?



High percentage of empty hauls

- China surveys: 40-50% empty miles = **Greater than USD 8 billion annual loss**
- Philippines: 89% delivery vehicles empty return trips
- India survey: 37-46% of trips are empty (Clean Air Asia survey, 2010)
- Vietnam study: ~33% of trips are empty (World Bank, 2013)

**FOOD WASTAGE**  
**ABOUT 1/3 OF THE FOOD**  
**PRODUCED IN THE WORLD**  
**FOR HUMAN CONSUMPTION EVERY YEAR:**  
**APPROXIMATELY 1.3 BILLION TONNES**  
**GETS LOST OR WASTED.**



Whenever products are wasted in logistics, their entire lifecycle resources are also wasted.

Loss of food equates to loss of water, land, fuel, agricultural chemicals, etc.

The same applies for anything that cannot be safely or securely delivered to consumers.


More importantly, it means unhealthy market environment and unsustainable economy growth potential.

## Who pays for inefficiency?



- Consumers – costs are passed on to consumers
- National economies – fuel import costs, fuel subsidy costs, foreign exchange costs, etc.
- National residents – health costs, crop losses and other issues that arise from pollution
- Ecosystems – resource extraction and land-use change results in long-term or permanent destruction





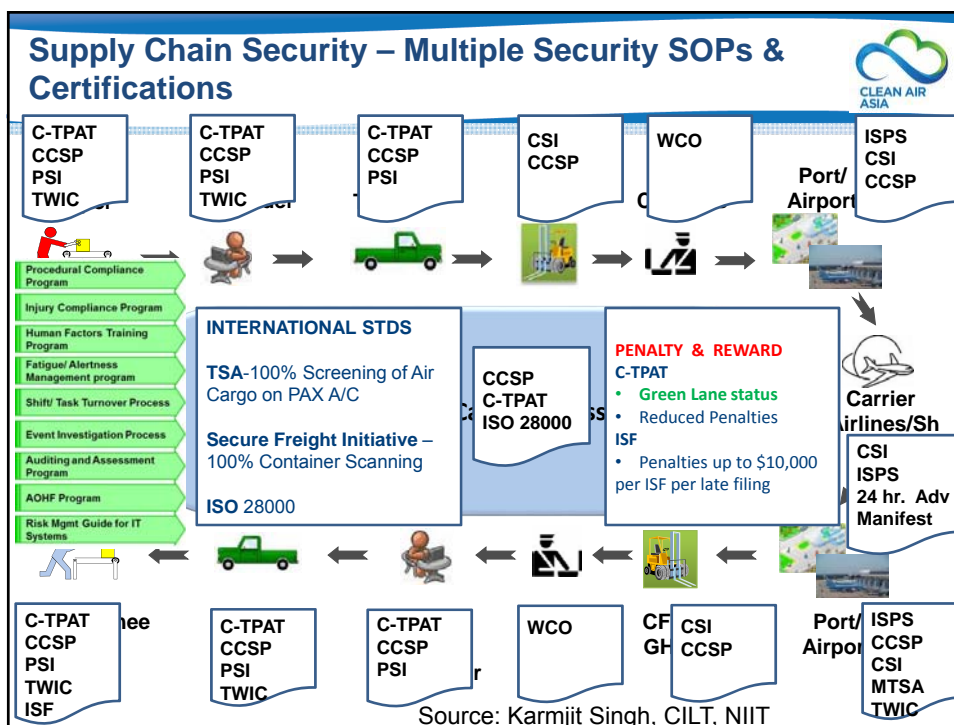
## Safe, Secure...and Green Cargo

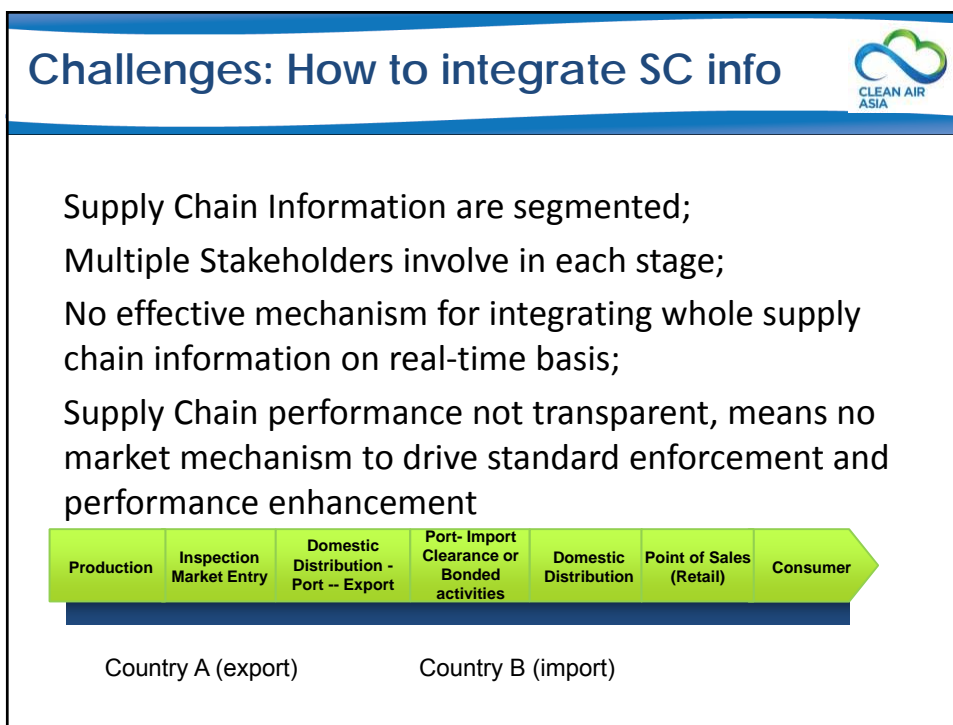
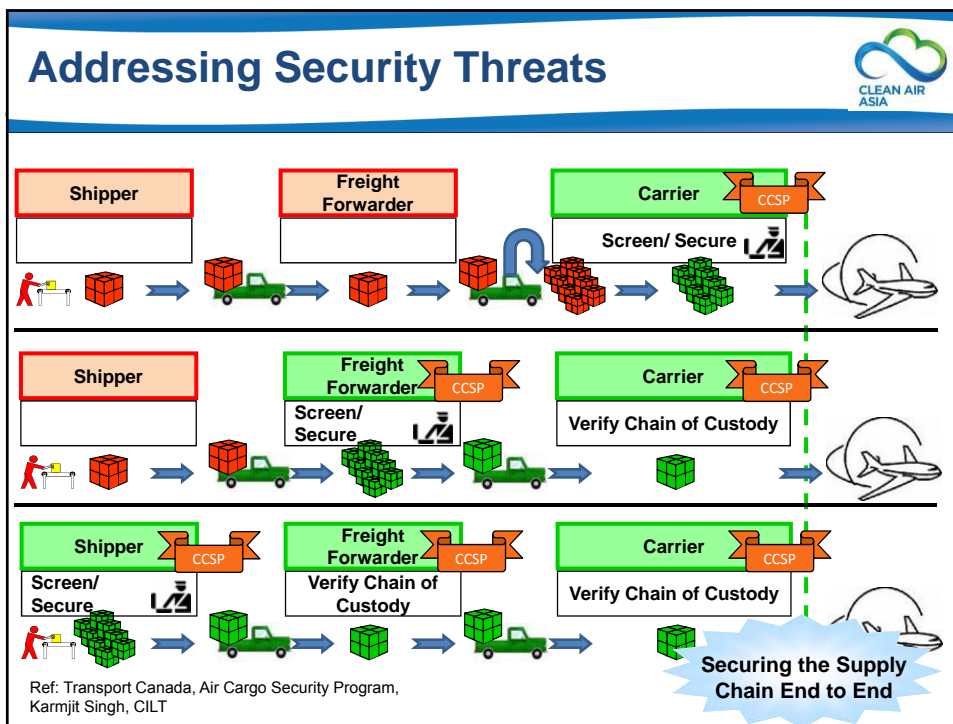
# How can these external costs be accounted for?

### Trust and Transparency: Role of Freight and Logistics

### And

### Ports



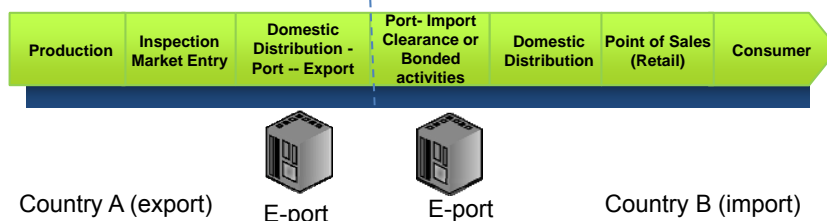


## E-Port relevance

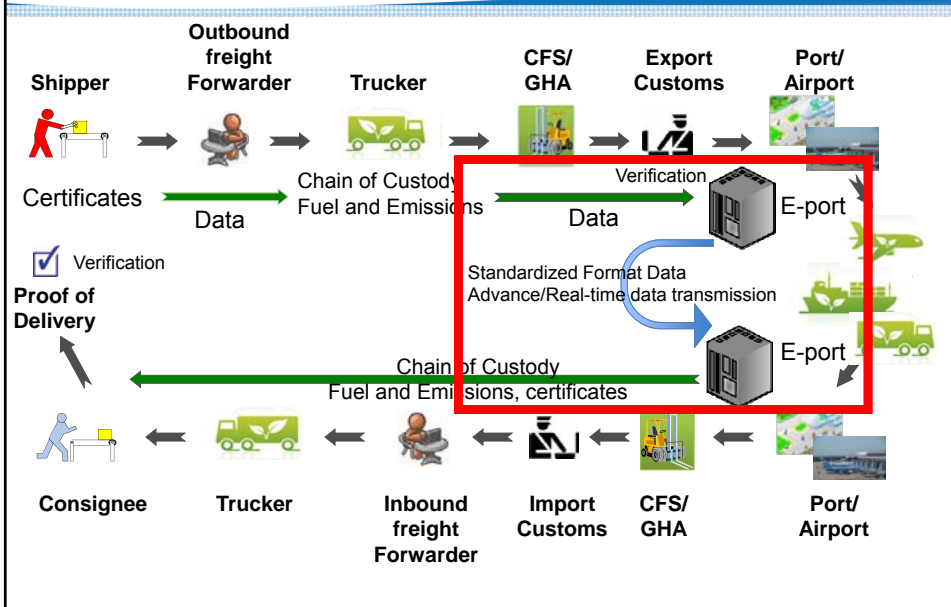


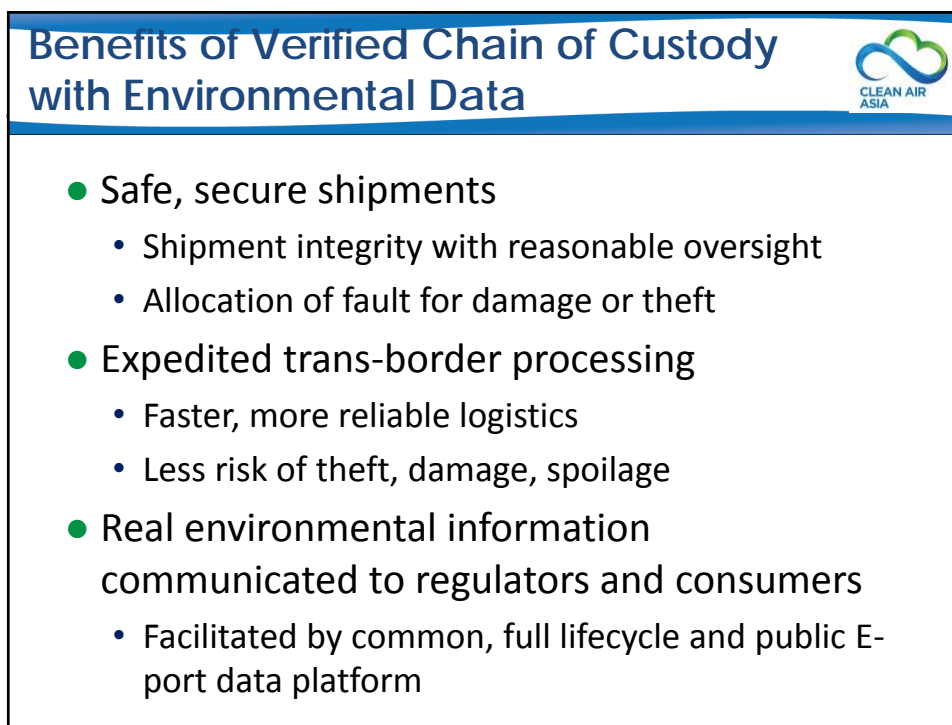
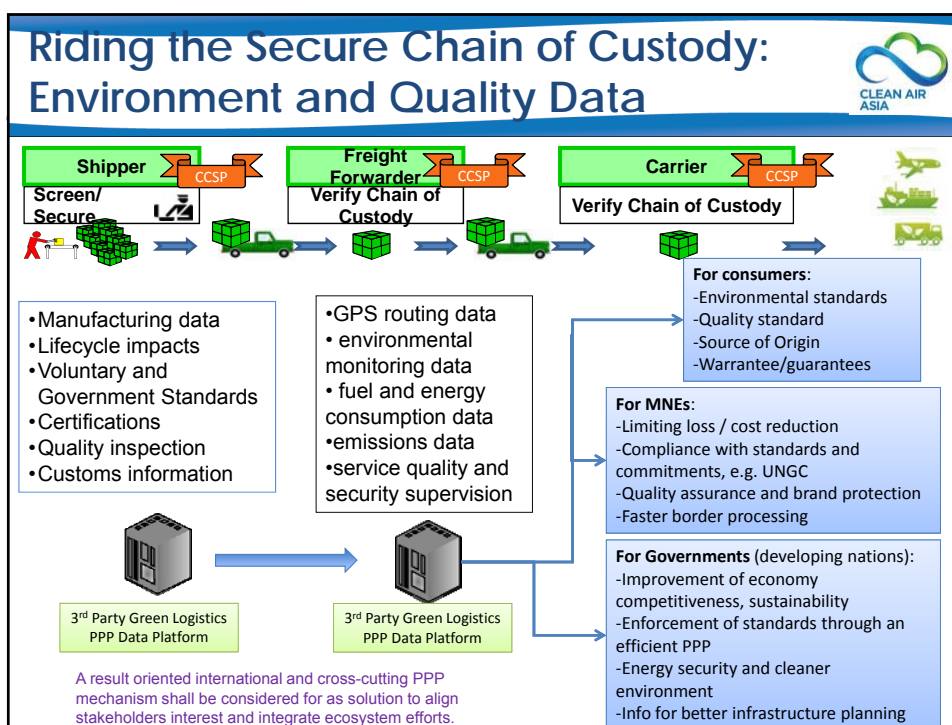
The concept of E-Port is an ICT infrastructure for a major cargo hub, which consists multimodal transportation capacity, and handles significant trade and transport volume.

E-Port as a 3<sup>rd</sup> party holistic ICT platform interface with all stakeholders, critical for import and export processes, and can support border and behind border activities on “real-time” basis.



## Role of the E-Port in Verification and Transmission of Supply Chain Data





## Conclusions



- Green logistics aren't just "environmental" green, they are "Economic" green
  - Reducing loss from logistics means saving resources and money from the entire lifecycle of products, and ensuring economic sustainability
- Green logistics is pivotal for many products' final quality and almost all industry sustainability
- Evolution in end-to-end traceability for security and safety processes enables environmental data traceability
- E-Ports are key points of chain of custody verification and points of data collection and communication

## Next Steps



- Case studies and pilots are required to initiate progressive advancement
  - Industry Model: to develop a best practice example using a product/industry
  - Regional Model: to develop a best practice example using a city or region as example
  - E-Port as best ICT platform as all cross-border trades are conducted in a port-port matter
  - **Proof of concept pilot:** linking fuel consumption and emissions of trucks in Shanghai bonded districts to the shipments they carry, over an E-port data platform
- Green Freight & Logistics Technical Research and Support Center
- Green Freight & Logistics to Green Supply Chain in context of Global Value Chain

## What is Green Freight and Logistics (On-road)?



- A set of strategies that systematically addresses Green Logistics from each step of the logistics supply chain
  - Using Market Mechanism to drive industry eco-system participation and cultivate industry champions
  - Promote PPP and End to End Product Traceability (E2ETOP)
  - Vehicle and fuel standards and technologies
  - ICT improvements and logistics efficiency
  - National government policies and incentives
  - Finance accessibility for infrastructural and vehicle upgrades
  - Development of exemplary cases and enabling environment
  - Establishment of Technical Support Center for APEC using E-Ports

For more information: [www.cleanairasia.org](http://www.cleanairasia.org)



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