

# China's Port and Ship Emission Control Strategy

**Simon Ng**  
Chief Research Officer

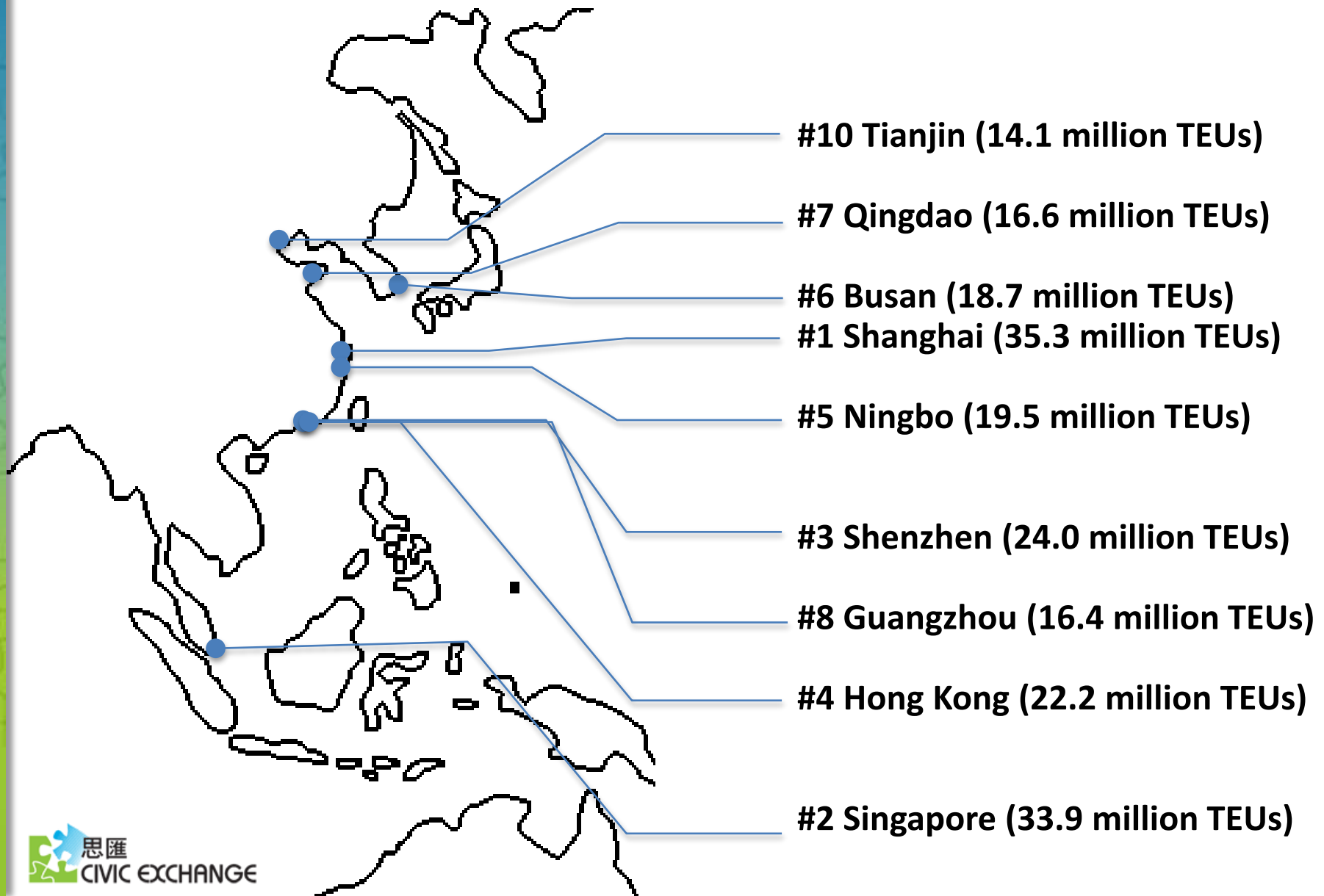
12 October 2015  
Hamburg – Hong Kong Dialogue:  
Clean Air in Ports



The background features several large, organic, rounded shapes in a vibrant green color. These shapes are set against a plain white background, creating a high-contrast, minimalist aesthetic. The shapes are irregular and fluid, resembling stylized leaves or abstract forms. One large shape is on the left, another is in the lower right, and a third is in the bottom right corner. The overall composition is clean and modern.

**BACKGROUND**

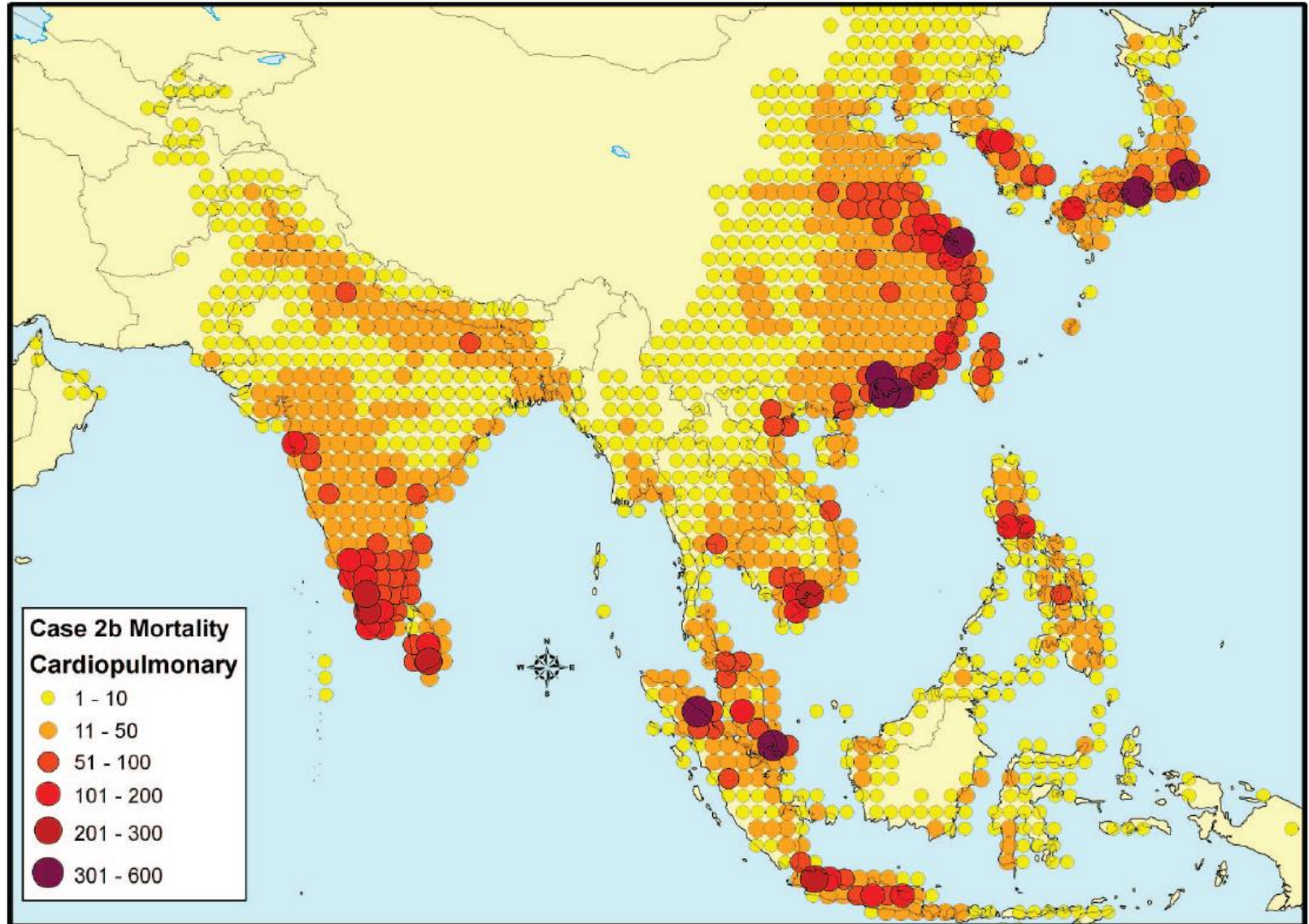
# Nine of top ten container ports in East and Southeast Asia, seven in China (2014)



# China in numbers

- Seven of the world's largest ports in container throughput
- Eight of the world's largest ports in cargo throughput
  - Ningbo-Zhoushan, Shanghai, Tianjin, Guangzhou, Suzhou, Qingdao, Tangshan, Dalian
- ~ one-third of the world's container throughput
- Pearl River Delta handling over 62.5 million TEUs
- Yangtze River Delta handling over 55 million TEUs

# Ship PM<sub>2.5</sub> emissions and mortality in Asia



Source: Corbett et al (2007) *Mortality from ship emissions: A Global Assessment*

# Emission sources

- Ship emissions
  - Ocean-going vessels
  - River vessels
  - Local / harbour crafts
- Port emissions
  - Cargo handling equipment
  - Storage equipment
  - Heavy-duty vehicles
  - Railway

# Contribution of ship emission to air pollution

- Ship / port emission inventories
  - Shanghai
  - Shenzhen
  - Guangdong
  - Hong Kong
- Contribution to air pollution
  - Hong Kong, 2013 (all vessels: 50% SO<sub>2</sub>, 31% NO<sub>x</sub>, 36% PM<sub>10</sub>)
  - Shenzhen, 2014 (OGVs: 60% SO<sub>2</sub>, 11% PM<sub>2.5</sub>)
  - Shanghai, 2013 (all vessels: 22% SO<sub>2</sub>, 16.7% NO<sub>x</sub>, 4.4% PM<sub>2.5</sub>)

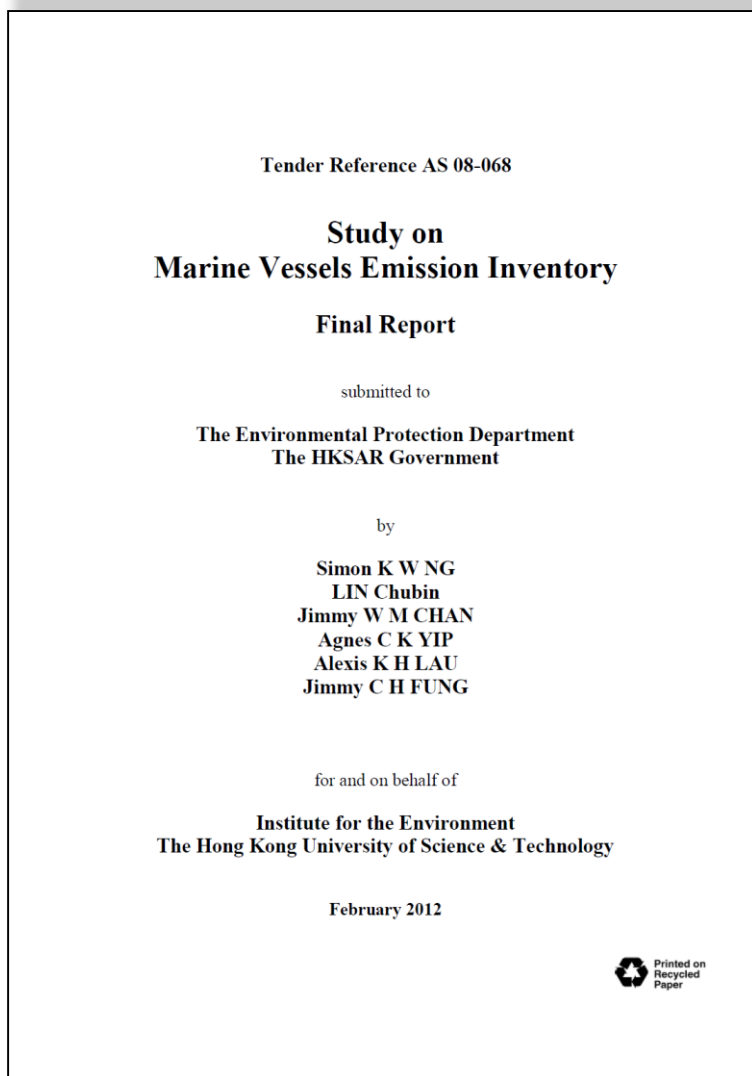


The background features several large, organic, abstract shapes in a vibrant green color, set against a white background. These shapes are irregular and fluid, resembling stylized leaves or organic forms. The green shapes are positioned on the left and bottom edges, with some overlapping each other. The overall aesthetic is clean and modern.

# **PORT / CITY LEVEL INITIATIVES**



# Study on marine vessels emission inventory



- Ship emission inventory for Hong Kong
- 2007 as base year
- Activity-based approach
- Detailed inventory to support policy
- Spatial dimension

Source: S Ng, et.al. (2012) *Study on Marine Vessels Emission Inventory*, Final Report.

# The Fair Winds Charter (2011 – 2014)

## The Fair Winds Charter 2011 - 2012

As international carriers, we recognize the emissions from our ships affect air quality in Hong Kong and the Pearl River Delta region. As responsible businesses, WE VOLUNTARILY COMMIT TO :

- Switching to a fuel containing 0.50% sulphur content or less ("low sulphur fuel") while at berth (at the terminal or at anchorage) in Hong Kong, to the maximum extent possible;
- Undertaking this voluntary initiative between 1 January 2011 and 31 December 2012;
- Collaborating within our sector and with the Hong Kong SAR and Guangdong Governments to introduce regulation on ship emissions, consistent with international standards.

### In support of the HKLSA FAIR WINDS CHARTER, WE :

- Urge the Hong Kong SAR Government to take a lead and work with the Guangdong Government to regulate the use of low sulphur fuel in the Pearl River Delta region by 31 December 2012. Urge the Hong Kong SAR Government to encourage broader industry participation by providing incentives, as it has done with other transport modes.
- Encourage the container terminals to support this initiative by offering advantages to participating ships, as well as by addressing emissions from cargo handling equipment, and the trucks and local craft that service the terminals.
- Encourage ocean-going passenger liners and other maritime users of the Port of Hong Kong to use low sulphur fuel while at berth in Hong Kong .
- Encourage cargo producers and buyers to favour participating shipping lines as a way of meeting their sustainable supply chain commitments.
- Welcome the support of end consumers who purchase the goods that the shipping industry carries.



Crystal Cruises



EVERGREEN LINE

HAMBURG SÜD



Hapag-Lloyd



CHINA NAVIGATION



Prestige Cruise Holdings



# Government incentive scheme for OGVs

Public Consultation

Study Reports

Guidelines & References

Advanced Search

Get Adobe Reader

香港家書  
空氣質素指標

## Port Facilities and Light Dues Incentive Scheme For Ocean Going Vessels using Cleaner Fuel

### Port Facilities and Light Dues Incentive Scheme

[Background](#)

[Eligibility](#)

[Registration](#)

[List of Registered Vessels](#)

[Application](#)

[Fuel Switch Log Sheet](#)

[News and Events](#)

[References](#)

[Further Information](#)



### Background

Ocean going vessels (OGVs) run on residual oil, whose sulphur content is 2.8% on average. The emission of OGVs while at berth accounts for about 40% of their total emission within Hong Kong waters. To reduce marine emission, the Government is encouraging OGVs to use fuel with sulphur content not more than 0.5% while at berth in Hong Kong waters by a 3-year incentive scheme that reduces the port facilities and light dues of OGVs that have adopted this green practice. The use of low sulphur fuel can substantially reduce air pollution at locations close to their berthing areas.

[\[Back to top\]](#)

# A Clean Air Plan for Hong Kong, 2013



- Regulating at-berth fuel switching for OGVs
- Upgrading fuel for local crafts
- On-shore power at Kai Tak Cruise Terminal
- Regional fuel switch at berth
- PRD ECA

# Air Pollution Control (Ocean Going Vessels) (Fuel at Berth) Regulation

- At-berth fuel switch regulation gazetted on 13 March 2015 and tabled in LegCo on 18 March.
- After LegCo's approval on 15 April 2015, the regulation became effective starting from 1 July 2015.
- Hong Kong becomes the first city in Asia to regulate ship emissions through marine fuel used by ocean going vessels
- 12% of total SO<sub>2</sub> and 6% of PM<sub>10</sub> will be reduced
- The government will also extend the port facilities and light dues incentive scheme for ocean-going vessels until March 2018

# Shenzhen incentive scheme

- Starting from 1 October 2014 for 3 years
- 200 million yuan per year
- Endorsed by different government agencies
- Subsidy for on-shore power construction and use
- Subsidy for at-berth fuel switching
- Encourage voluntary actions

# Shanghai and Yangtze River Delta

- Ship and port emission inventory work in Shanghai
- Regional collaboration in Yangtze River Delta on co-prevention and co-control
- Shanghai Clean Air Action Plan
- Specific action plan related to port and ship emission
- Local law and regulations
- Coastal and river vessels



A large, stylized green leaf graphic is positioned on the left side of the page, extending towards the center. The leaf is composed of several rounded, overlapping shapes in a vibrant green color, with white spaces between them, creating a modern, abstract look. The text is centered horizontally and partially overlaps the right edge of the leaf graphic.

# **NATIONAL LEVEL ACTION PLAN**

# Ship and Port Pollution Prevention and Control Implementation Plan (2015 – 2020)

- Ministry of Transport of the PRC
  - Consultation document published on 15 June 2015
  - Implementation Plan published on 31 August 2015
- Key objectives
  - Prevent and control ship and port pollution (air emission)
  - Improve law, regulations and standards
  - Experiment emission control zone / low emission zone

# Key targets

- In 2020, ship emission of SO<sub>x</sub>, NO<sub>x</sub> and PM in key regions (PRD, YRD and Bohai Region) to be reduced by 65%, 20% and 30% respectively, relative to 2015 level
- 90% of harbour crafts and government vessels in major ports to use on-shore power at berth
- 50% of container terminals, ro-ro terminals and cruise terminals to be equipped with on-shore power facilities

# 11 tasks

1. Speed up revision of regulations, standards and guidelines
2. Continue structural reform of the vessel fleet
3. Set up ship emission control zones / low emission zones
4. Develop specific projects on port operation pollution control
5. Promote and co-ordinate the construction of ship pollutant reception and disposal facilities
6. Promote the use of liquefied natural gas (LNG)

# 11 tasks (continued)

7. Promote berthing vessels to use on-shore power
8. Strengthen the monitoring and control of pollutant emission
9. Upgrade the level of pollution prevention technology
10. Enhance the co-ordination of waterborne transport
11. Improve response readiness for water pollution incidents

# Vessel emission standards

- Revised vessel emission standards will be enforced on new coastal vessels starting from 2018 and on river vessels from 2021.
- By the end of 2020, in-use vessels must retrofit to meet the revised standards. Non-compliant vessels will be phased out.

# Emission control zone / low emission zone

- Emission control zones / low emission zones will be set up in the PRD, YRD and Bohai region to control ship emission of SO<sub>x</sub>, NO<sub>x</sub> and PM
- Implementation plan will be announced by the end of 2015 to set up the zones in phases
- Core ports in the respective region will be selected for pilot
- Effectiveness of the zones will be assessed, and requirement may be extended to all ports in the respective region
- By end of 2018, assessment will be made to determine the need of more stringent requirement, the extension of emission control zones / low emission zones, and other additional measures



# Promotion of the use of LNG

- Implement MoT's directive on the use of LNG in waterborne transport
- Further improve standards and guideline on LNG refueling facilities
- Coordinate LNG refueling facilities planning and construction
- Promote LNG trial scheme for both vessels and terminals
- By end of 2015, complete the planning of LNG refueling terminal network along Yangtze River, Xijiang shipping lane, and Beijing-Hangzhou Canal

# Promotion of on-shore power

- By end of 2015, to announce a list of new pilot projects for on-shore power.
- By end of 2016, to establish an electricity tariff scheme and incentive scheme for vessels at berth using on-shore power
- By end of 2016, to complete the on-shore power standard for port use
- By end of 2018, to promote the construction of on-shore power facilities in emission control zones / low emission zones in the PRD, YRD and Bohai region, and to encourage other ports to promote on-shore power use

# Thank you

**Simon K W Ng**

[kwsng@civic-exchange.org](mailto:kwsng@civic-exchange.org)

Visit Civic Exchange on Facebook

<https://www.facebook.com/civicexchange>