

Ship Emission Control in Hong Kong and the Pearl River Delta Region

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**Maritime Shipping and Environment Protection –
How to master the global challenge?**

Kick-off event of the Jens-Peter and Betsy Schlüter
Foundation for shipping and environmental
protection

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BACKGROUND

Exhaust emissions from ships

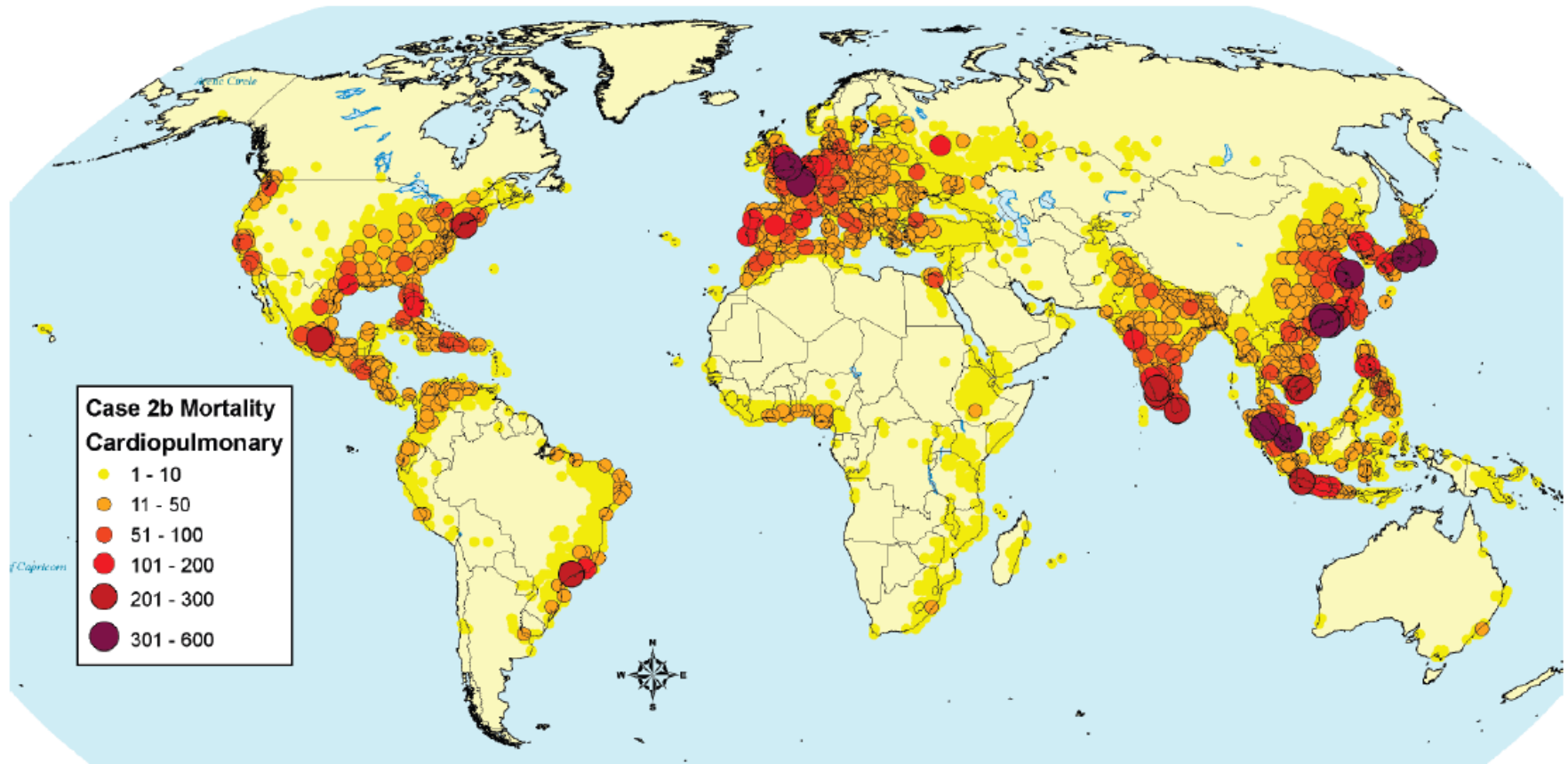


Marine Fuel

- Bunker fuel/marine fuel oil (max. 3.5% sulphur (S)) burnt by ocean-going vessels is thousands of times higher in sulphur content than fuel used by vehicles (0.005% S for ULSD; 0.001% S for Euro V diesel), leading to higher SO_2 and PM_{10} emissions.



Ship PM_{2.5} emissions and mortality



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

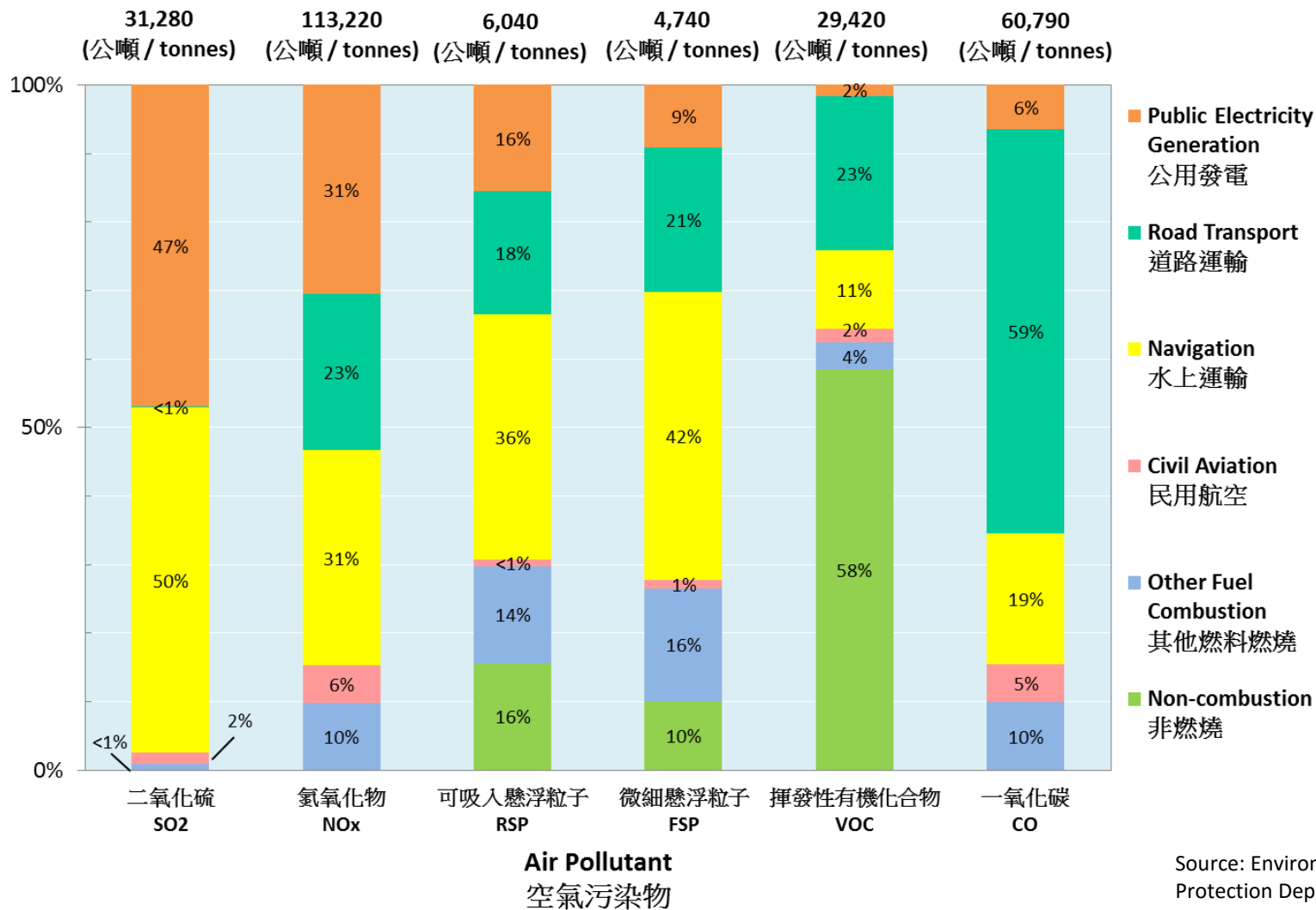
Proximity to population and health impact



Emission inventory

2013 年排放清單

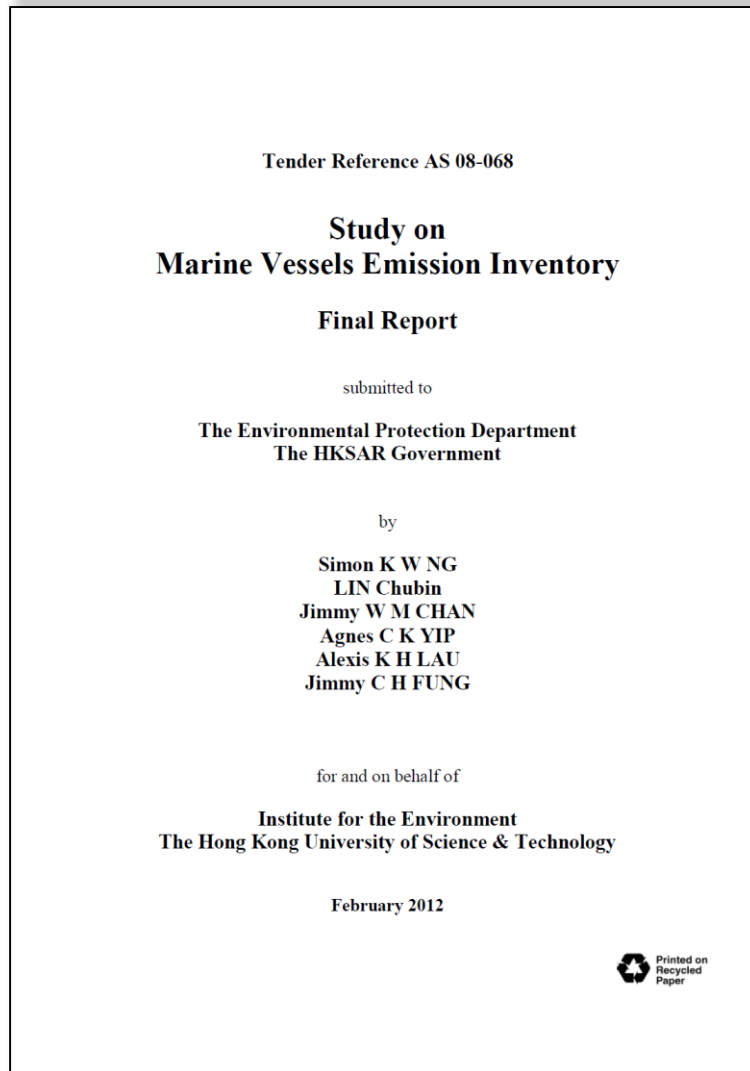
2013 Emission Inventory



Source: Environmental Protection Department, HKSAR Government

SCIENTIFIC RESEARCH

Study on marine vessels emission inventory

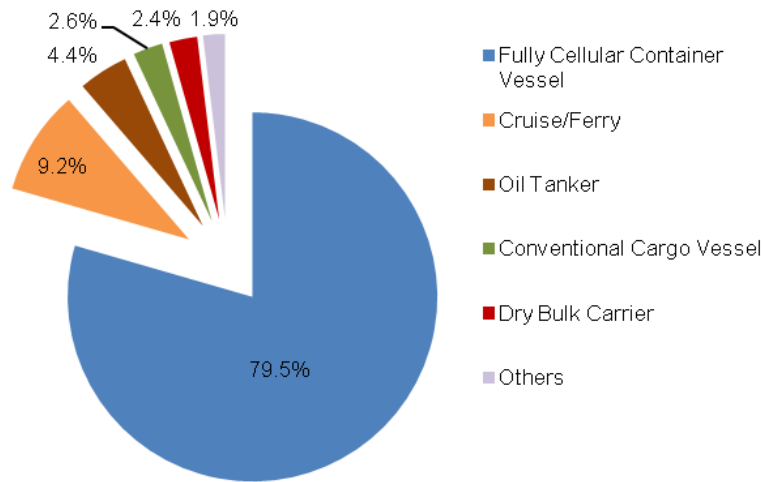


- ship emission inventory for Hong Kong
- 2007 as base year
- activity-based approach

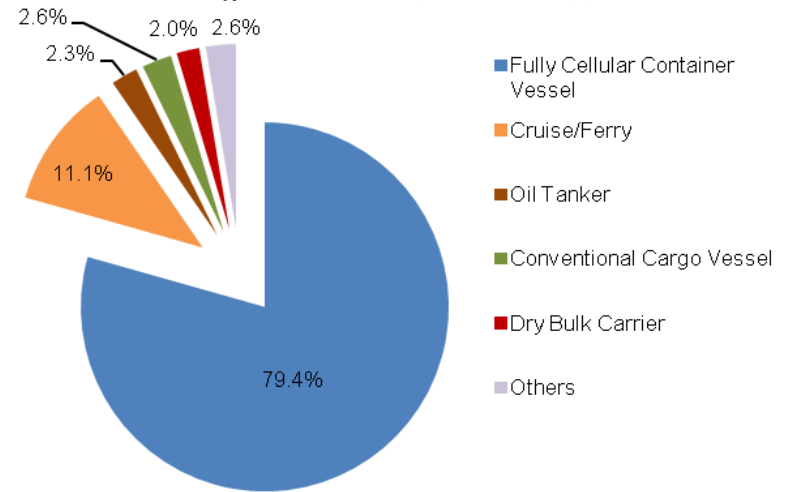
Source: S Ng, et.al. (2012) *Study on Marine Vessels Emission Inventory*, Final Report.

OGV emissions by vessel type

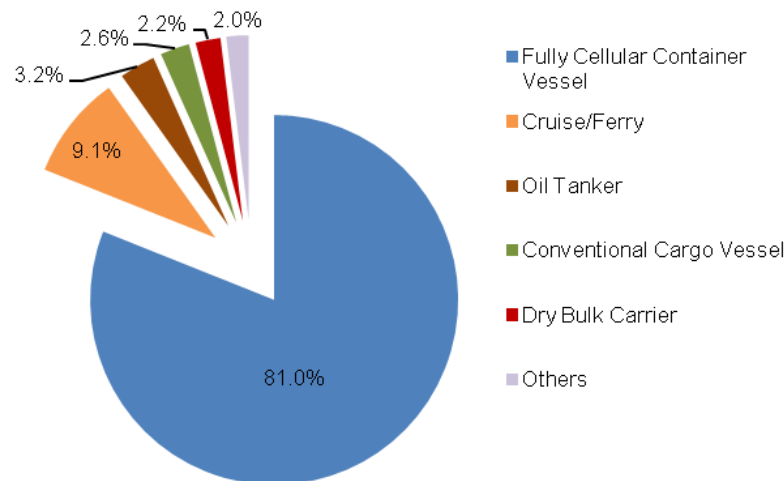
OGV SO₂ Emission by Vessel Type (%)



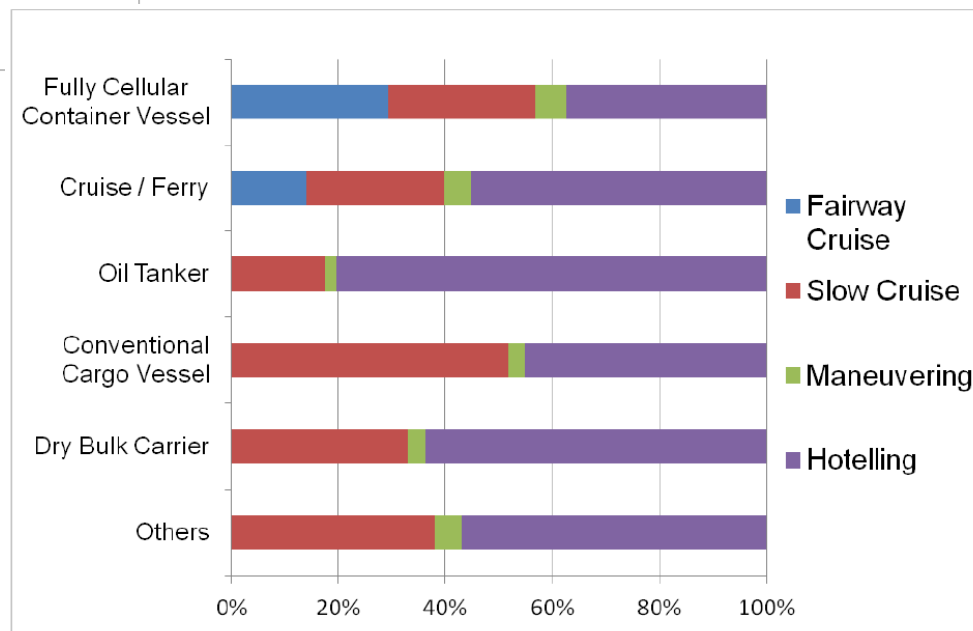
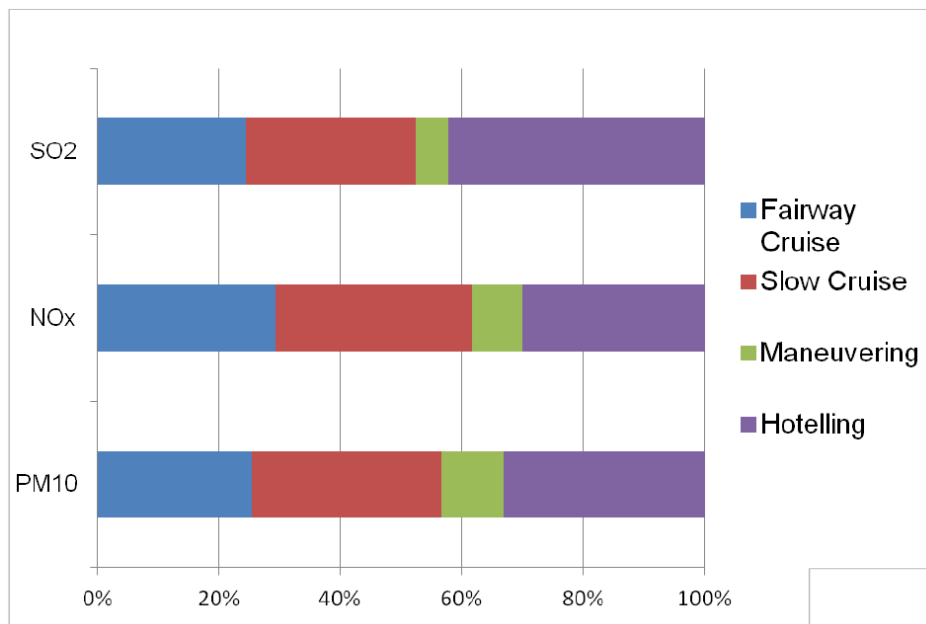
OGV NO_x Emission by Vessel Type (%)



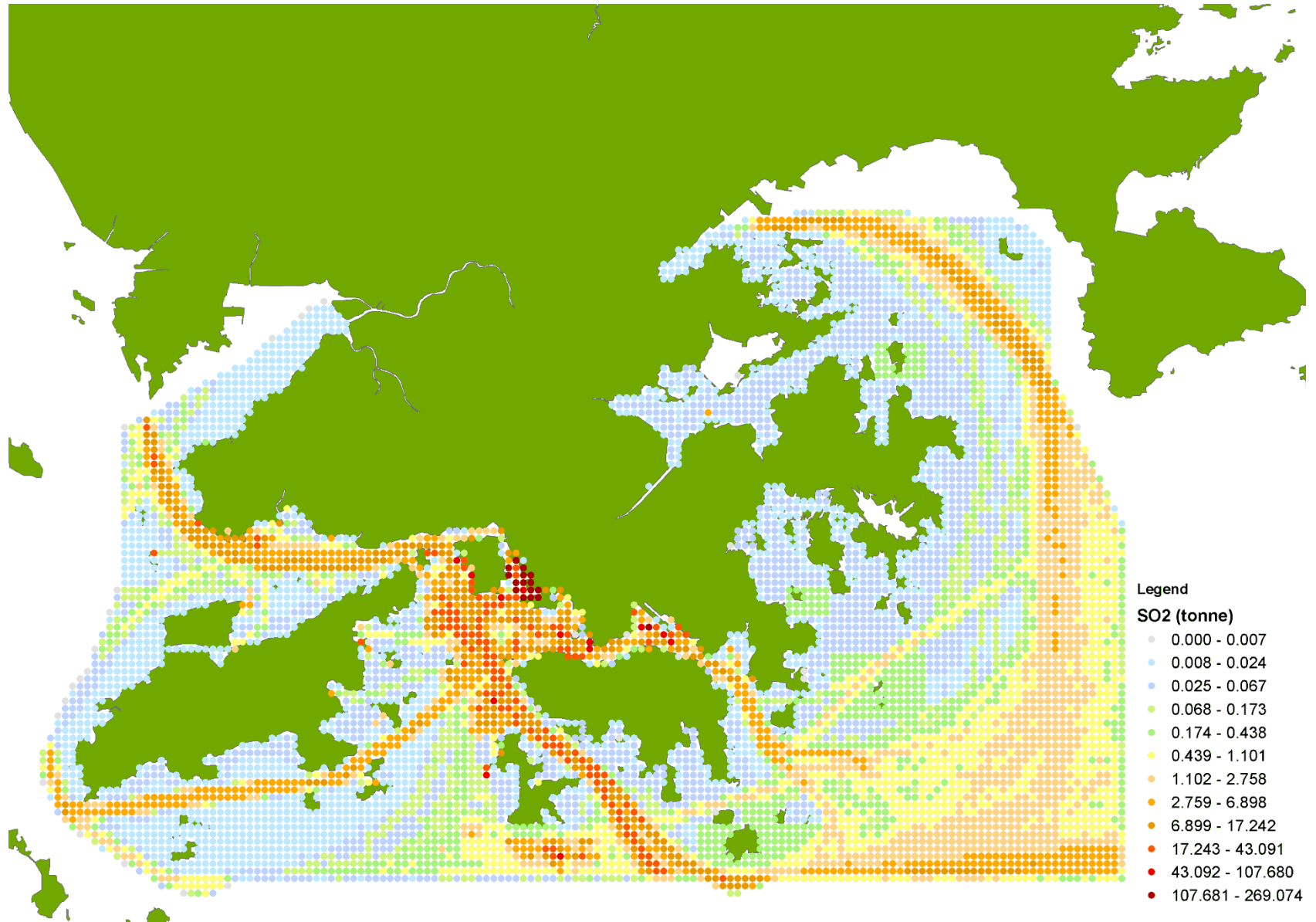
OGV PM₁₀ Emission by Vessel Type (%)



OGV emissions by mode



Ship emissions



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

STAKEHOLDERS ENGAGEMENT

Voluntary industry-led initiatives

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



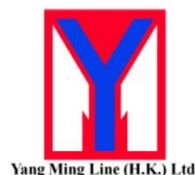
Prestige Cruise Holdings



Fair Winds Charter 2013 and 2014





CHINA NAVIGATION



Supporting Organisations:




Government incentive scheme for OGVs

[Public Consultation](#)
[Study Reports](#)
[Guidelines & References](#)
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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](#)
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- [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.

POLICY BREAKTHROUGH

Policy Address 2013

Vessel Emission Reduction

140. In 2011, marine vessels were the largest source of respirable suspended particulates, nitrogen oxides and sulphur dioxide. In particular, the emissions of ocean-going vessels at berth accounted for about 40% of their total emissions within Hong Kong waters. In September 2012, the Government launched an incentive scheme to encourage ocean-going vessels

at berth to switch to low-sulphur diesel. We are also considering bringing in new legislation to enforce the requirement of fuel switch at berth. We plan to submit our proposal to this Council in the next legislative session following the completion of consultation with the maritime sector. Meanwhile, we are stepping up our efforts with the Guangdong Provincial Government in exploring the feasibility of requiring ocean-going vessels to switch to low-sulphur diesel while berthing in Pearl River Delta ports. Also, the first berth of the Kai Tak Cruise

terminal will be commissioned in the middle of this year. We plan to seek funding approval from this Council to install on-shore power supply facilities for use by cruise vessels with such facilities. This will enable cruise vessels to switch to electric power while berthing and hence minimise their impact on air quality. We are also promoting the use of cleaner fuels among local vessels. We have conducted relevant tests and consulted the relevant sector.



A Clean Air Plan for Hong Kong, 2013

A CLEAN AIR PLAN FOR HONG KONG

Environment Bureau in collaboration with
Transport & Housing Bureau
Food & Health Bureau
Development Bureau



- 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

Policy Address 2014



Air Quality

157. The Environment Bureau (ENB) announced A Clean Air Plan for Hong Kong last March, with the goal of broadly achieving the new Air Quality Objectives (AQOs) by 2020. The new AQOs took effect this month.

158. The Government has reached a consensus with the industry to phase out some 82 000 old Euro III or earlier diesel commercial vehicles and the relevant legislation has been passed by this Council. Subject to this Council's approval for a provision of about \$11.4 billion to meet expenditure on *ex gratia* payments, we will kick-start the scheme in March this year. Moreover, newly registered diesel commercial vehicles will be subject to a service life limit of 15 years with effect from February 2014.

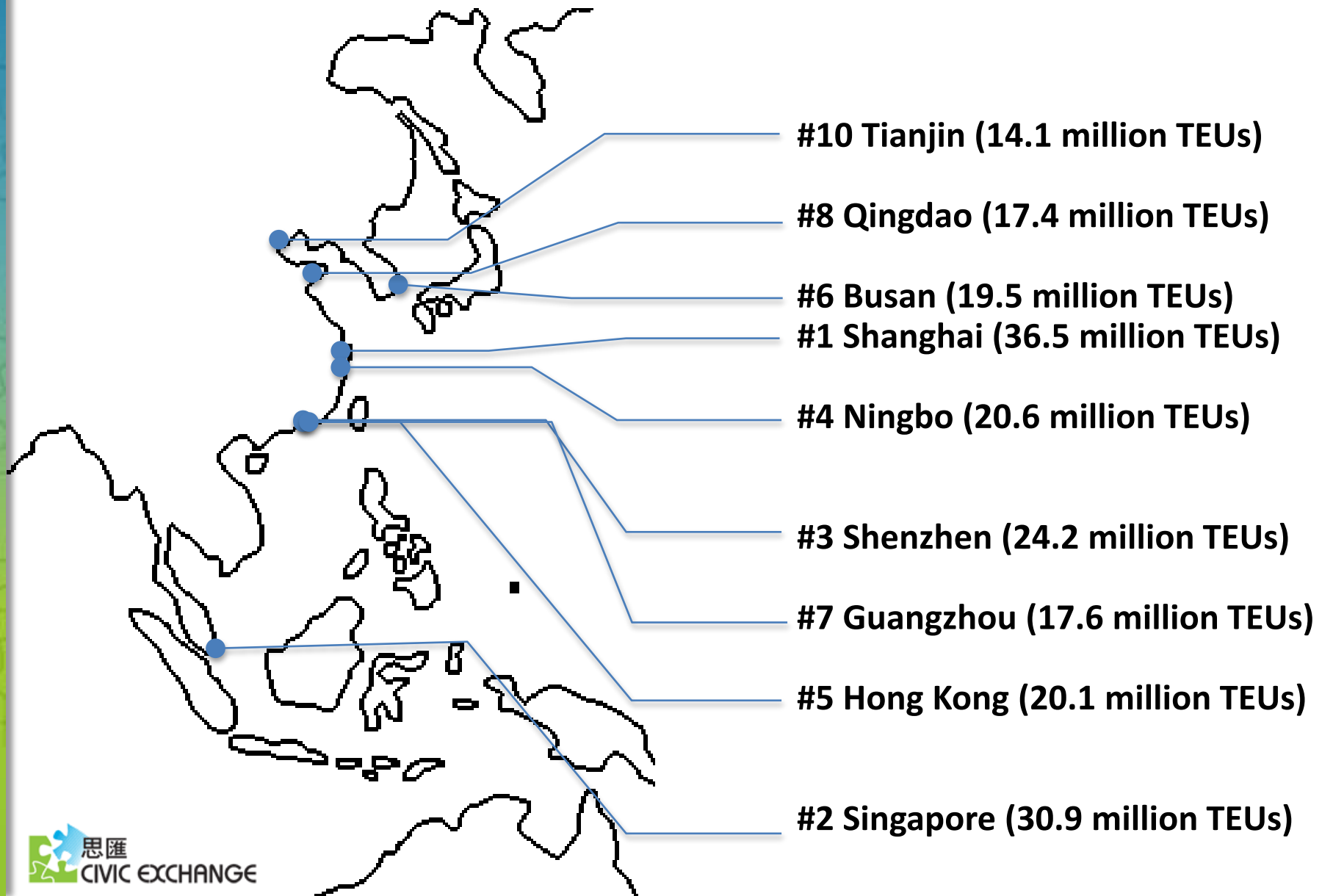
159. The sulphur content of local marine diesel will be reduced from 0.5% to 0.05%. The relevant legislation will soon be introduced into this Council. To reduce sulphur dioxide and particulate emissions, the ENB will introduce a bill into this Council within this year to require ocean-going vessels at berth in Hong Kong to switch to low-sulphur diesel. We will seek to implement the new requirement next year.

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 SO₂ and 6% of PM₁₀ will be reduced
- The government will also extend the port facilities and light dues incentive scheme for ocean-going vessels until March 2018

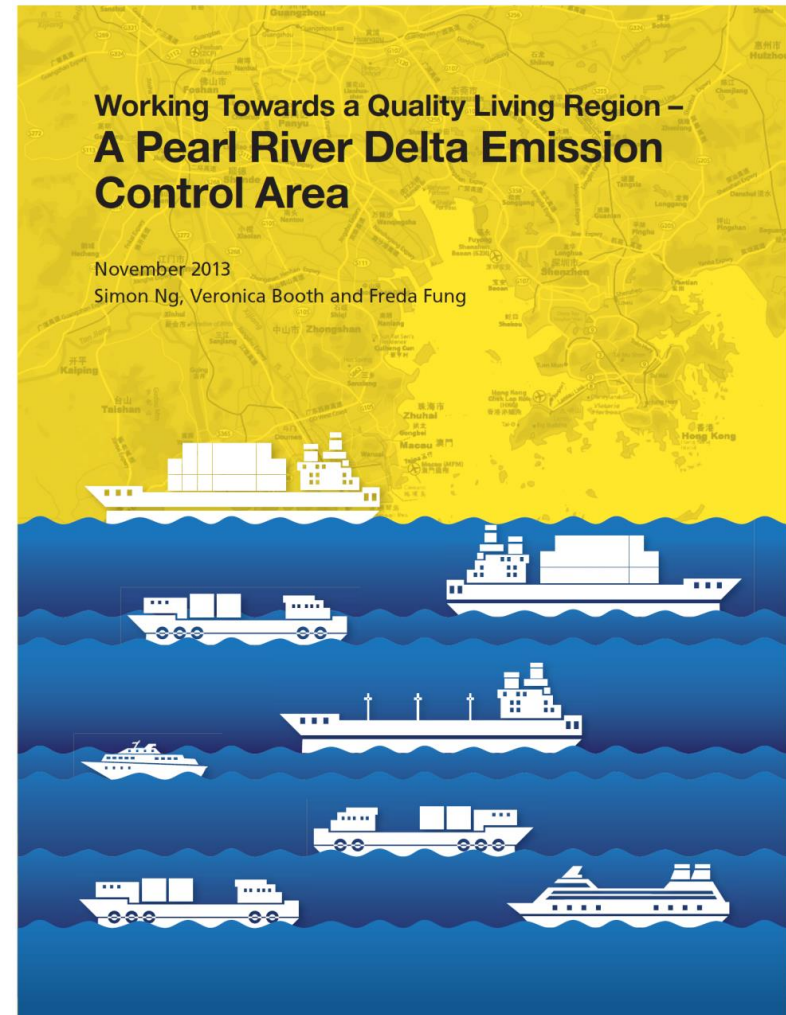
REGIONAL COLLABORATION

Nine of top ten container ports in East and Southeast Asia, seven in China (2015)



Civic Exchange's recommendations

- Encourage the use of 0.1% sulphur or lower fuel while at berth
- Promote the use of on-shore power
- Promote the use of other emission reduction measures and technologies, such as scrubbers and vessel speed reduction
- In the long run, to establish an emission control area for ships in the PRD waters



Shenzhen Incentive scheme (2014)

- 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

Emission control zone / low emission zone

- Domestic emission control zones / low emission zones will be set up in the PRD, YRD and Bohai region to control ship emission of SO_x, NO_x and PM
- Implementation plan was announced by the end of 2015 to set up the zones in phases
- Core ports in these regions 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

Thank you

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