

Transportation and Port Environmental Impacts



Lee Kindberg
Director, Environment

Ocean shipping is the most energy-efficient mode of transportation

90% of all goods transported globally are carried by ship

Maersk Line

- >470 container vessels
- Moves ~1.8 million containers/yr.
- Consumes over 10 M tonnes of heavy fuel oil annually



Vessels travel the world on routes that take weeks or months.

Multiple vessels are scheduled on each route to provide regular (weekly) service.



Transpacific 6 (TP6) - Eastbound

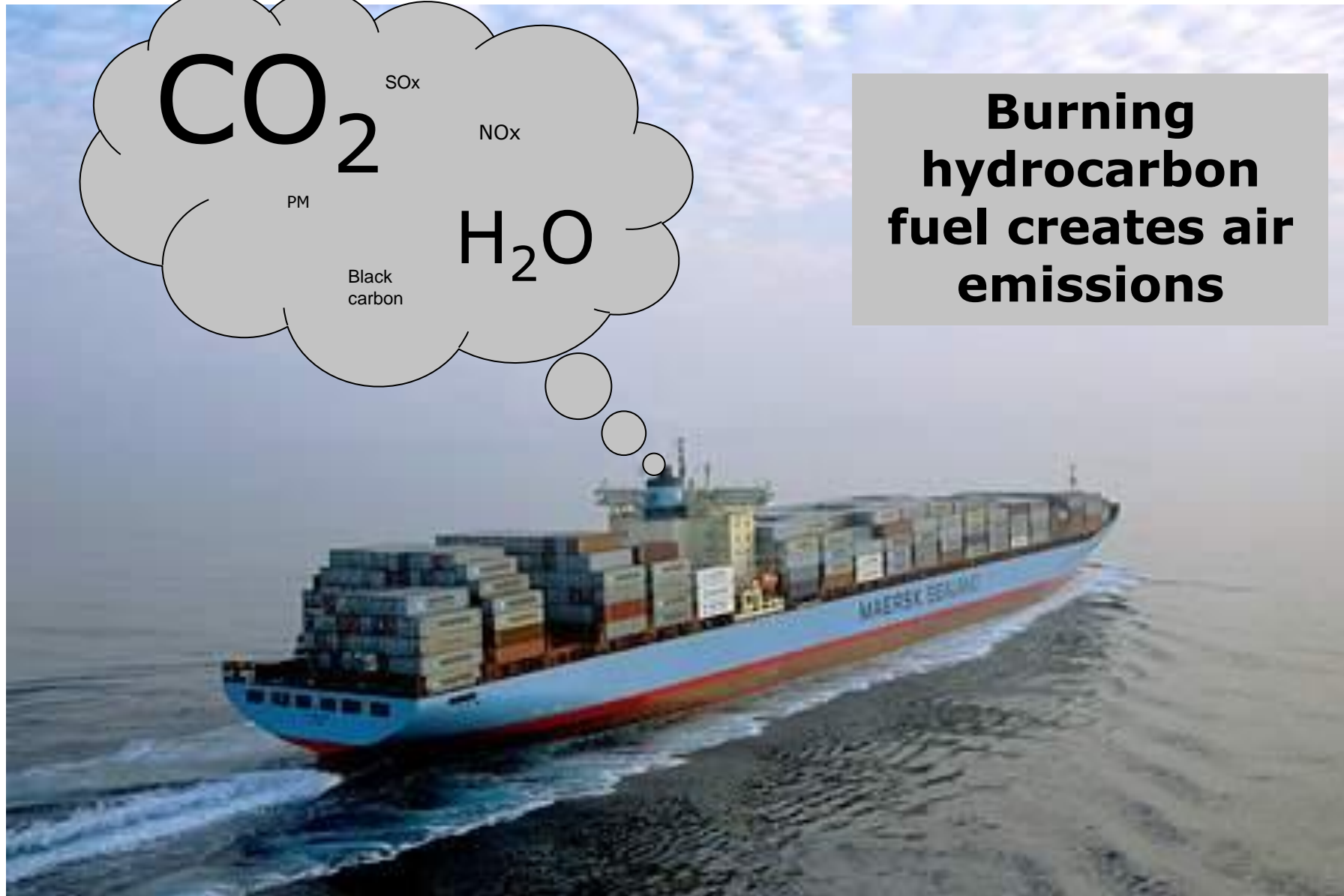
PORT	ARRIVES	DEPARTS	TRANSIT
Tanjung Pelepas, Malaysia	MON 1900	WED 0300	--
Yantian, Mainland China	FRI 2100	SAT 2200	2
Hong Kong, Mainland China	SUN 0400	MON 0400	4
Los Angeles, CA, USA	FRI 1800	TUE 0200	16

Note: Weekly Service



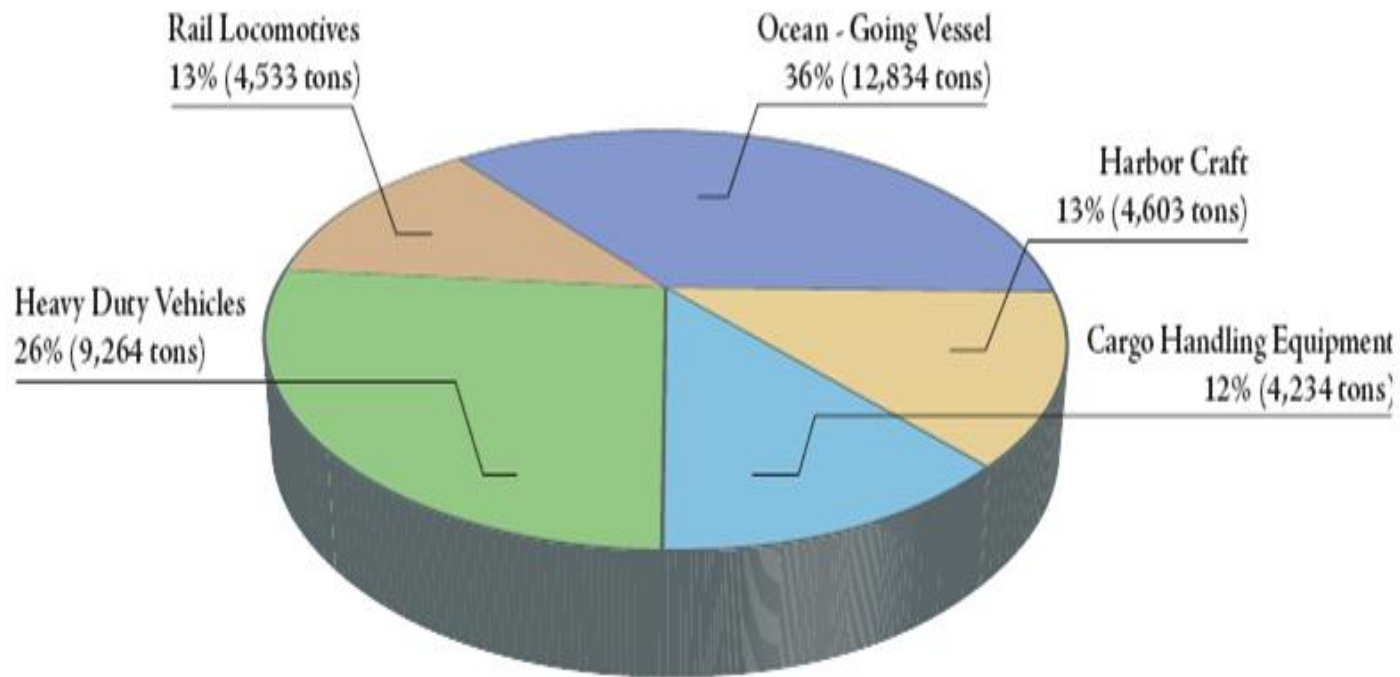
Transpacific 6 (TP6) - Westbound

PORT	ARRIVES	DEPARTS	TRANSIT
Los Angeles, CA, USA	FRI 1800	MON 1700	--
Yokohama, Japan	THU 0100	THU 1600	17
Nagoya, Japan	FRI 0800	FRI 1800	18
Shanghai (YS), Mainland China	SUN 1700	MON 0700	20
Ningbo, Mainland China	MON 1900	TUE 0600	21
Xiamen, Mainland China	WED 1300	THU 0001	23
Hong Kong, Mainland China	THU 2000	FRI 0700	24
Yantian, Mainland China	FRI 1200	SAT 0200	25
Tanjung Pelepas, Malaysia	MON 2100	WED 0400	28



Port area emissions sources

Baseline Year NO_x Emissions Contributions by Source Category



Source: San Pedro Ports Clean Air Action Plan

Ports must coexist with other water-front activities



“Green field” opportunities are rare in US ports

Dedicated highway exits

Automated gates

Electrified cargo handling equipment

On-dock rail

Buffers



Transportation does have a significant impact on the environment, but...

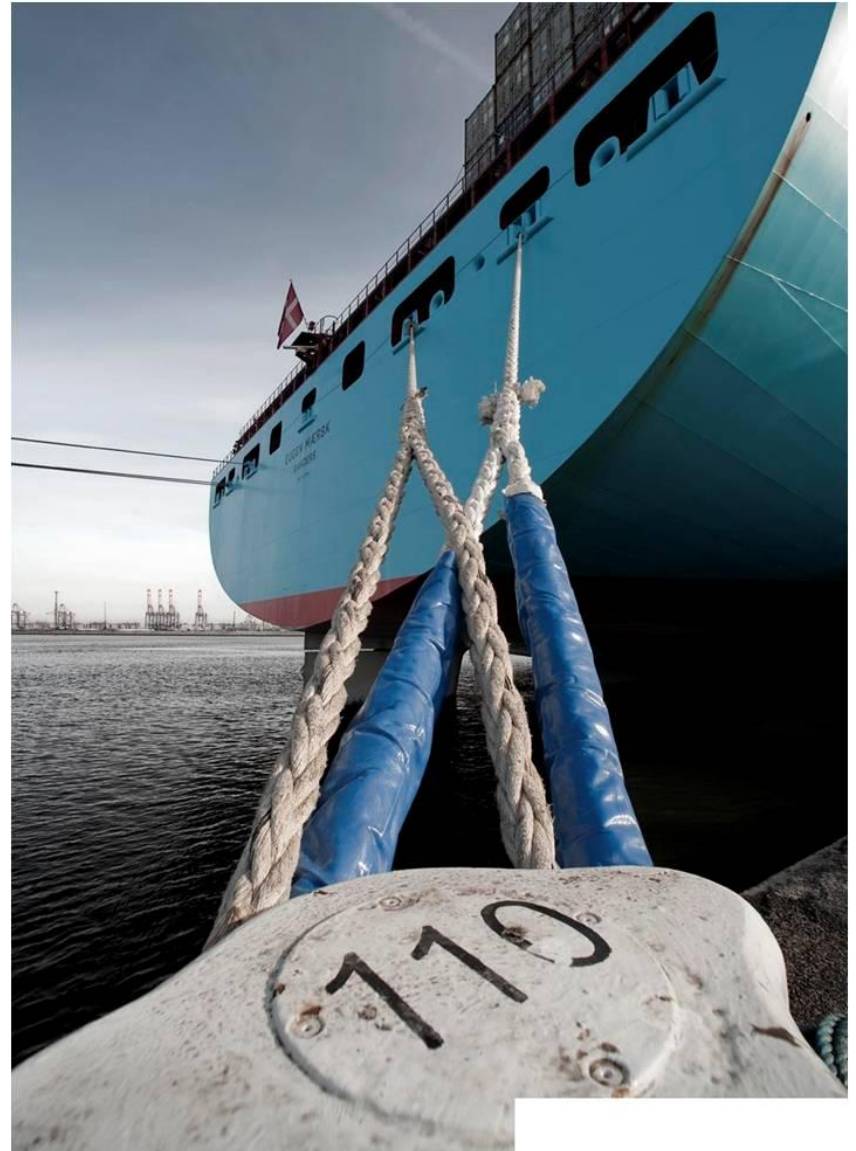


We are actually doing something about it.



Maersk Line environmental initiatives

- 25% reduction in relative CO2 emissions (2007-2020)
- Drive our own and industry SOx emissions to zero
- Drive negative impacts on the marine environment to zero



Cleaner fuel significantly reduces air emissions

➤ Maersk Line fuel switch initiative started in 2006 in California

- Over 1800 port calls
- Reduced over 3000 tons of air emissions in port areas
 - SO_x – 95%
 - PM – 85%
 - NO_x – 6-12%

➤ Houston -- Aug. 2010-2012 funded by EPA DERA grant

➤ Hong Kong in Sept. 2010.

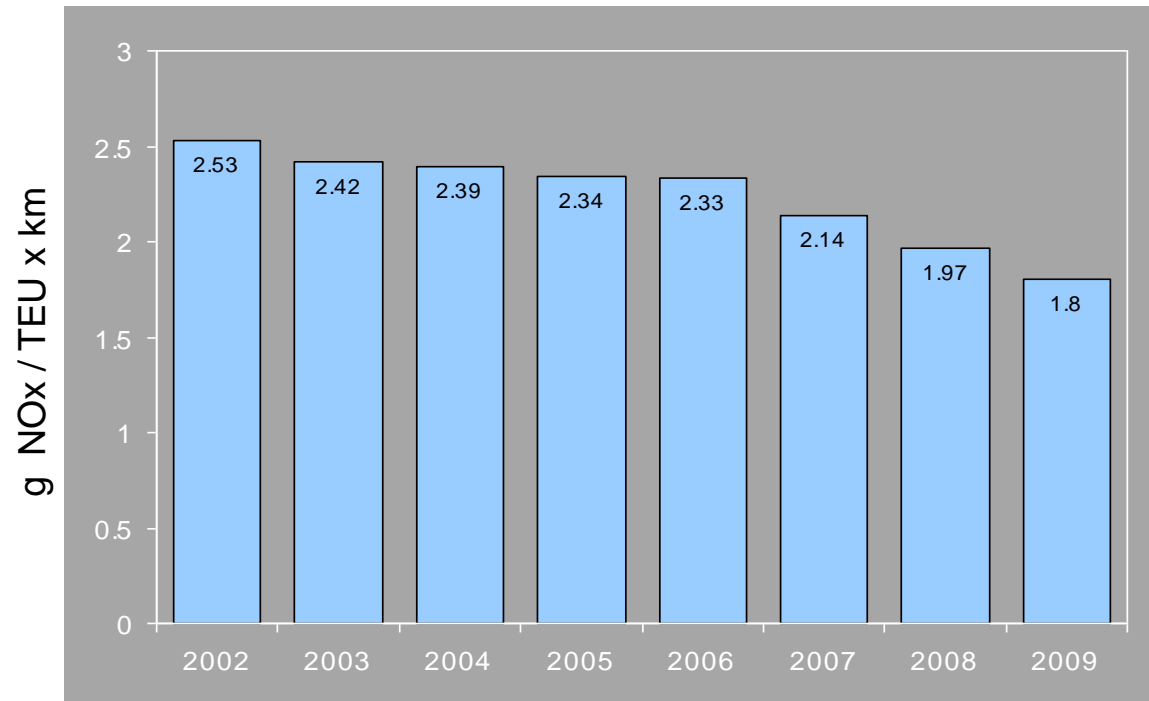


★ Fuel Switch Port

Vessels are using fuel more efficiently, so are reducing emissions

Due to

- Technologies
- Operations
- Speeds
- Vessel size



- NOx emissions are down 21% per container
- Reduced over two million tonnes CO₂
- Reduction target for 2020 is 25% below 2007 levels

Industry is making efforts to measure and reduce environmental impacts

Clean Cargo Working Group is a business-to-business forum with the goal “to promote more sustainable product transportation.”

- Standardized footprint calculation tools
- Annual survey of carrier environmental performance
- emissions factors by trade lane.



www.bsr.org

Take home messages

1. Major shippers and carriers are international
2. Rules need to be clear and consistent
3. Focus on CO₂ vs. “criteria pollutants”
4. Public – private partnerships and voluntary programs can and do work

Best practices for ports

Vessels

- Low sulfur fuel in port
- At-berth technologies
- Fuel efficiency

Marine Terminals

- On-dock rail
- Cargo handling equipment
- Automated gates

Equipment

- Energy efficient reefers
- Neutral chassis model or chassis pool

Port Authority

- Be a focal point for transportation planning
- Engage both community and industry in developing strategies
- Structure contracts and costs to encourage environmentally responsible actions

Government

- Align regulatory structures with international (IMO) and national
- Engage the industry in planning and implementation

Thank you

