

# Mitigating the effects of Port Operations on Climate Change

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Port of Rotterdam Authority  
November 12<sup>th</sup>, 2008

# Statistics

- ◆ Surface: 10,500 ha
- ◆ Commercial sites: 4,900 ha
- ◆ Employment in the port: 71,300
- ◆ Throughput 2007: 407 mio. Ton
- ◆ 37,500 seagoing vessels - 130,000 inland vessels
- ◆ Port entry to city > 40 km



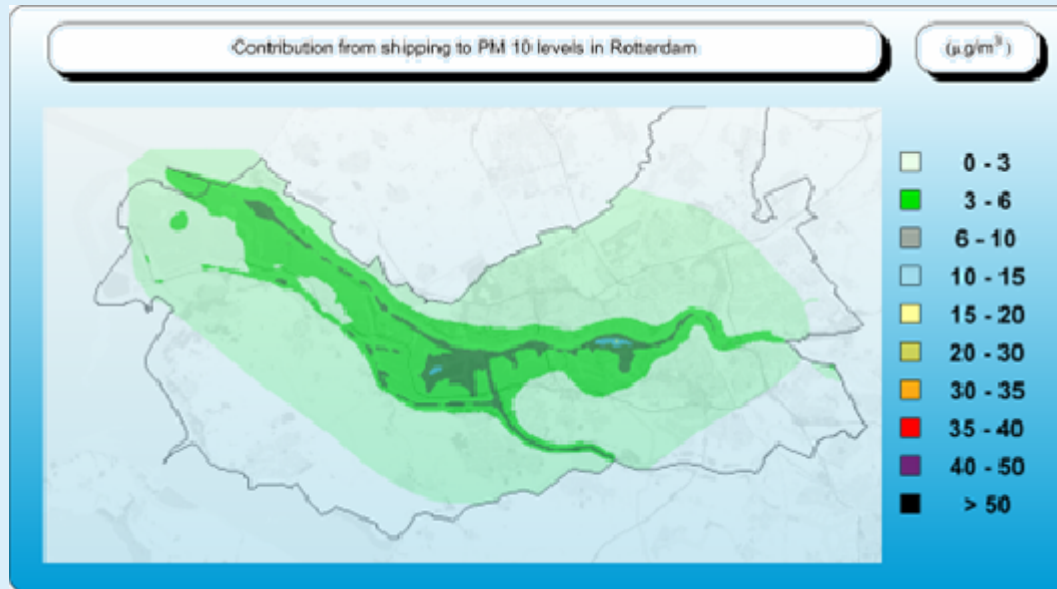
# Air quality

- ◆ Health and quality of life
- ◆ Urban development
- ◆ Port development and expansion





# Airquality



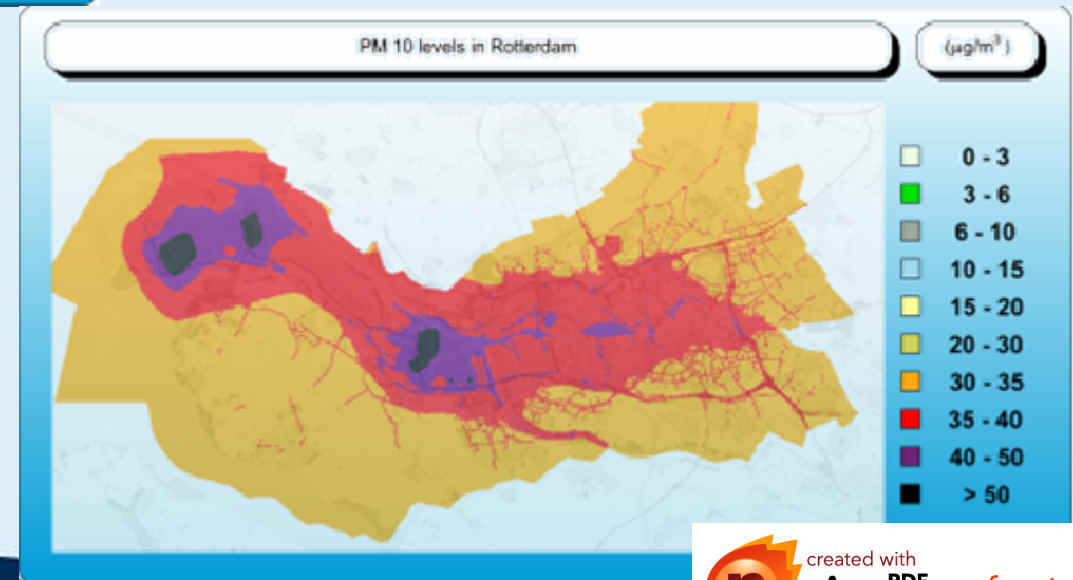
EU norm PM10 to date:

Average per annum:  $40 \mu\text{g}/\text{m}^3$

Max. 35 days average:  $50 \mu\text{g}/\text{m}^3$

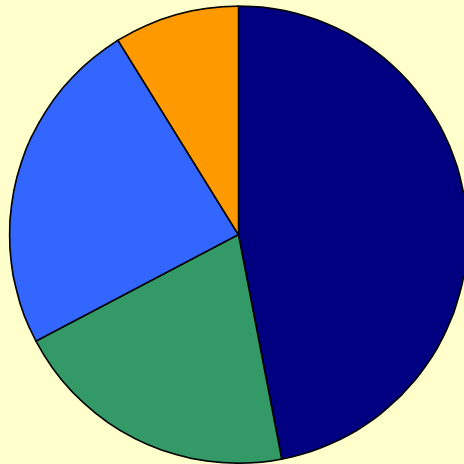
PM 2,5 norm (2015):  $25 \mu\text{g}/\text{m}^3$

EU norm per 2010  
Average per annum:  
 $40 \mu\text{g}/\text{m}^3$



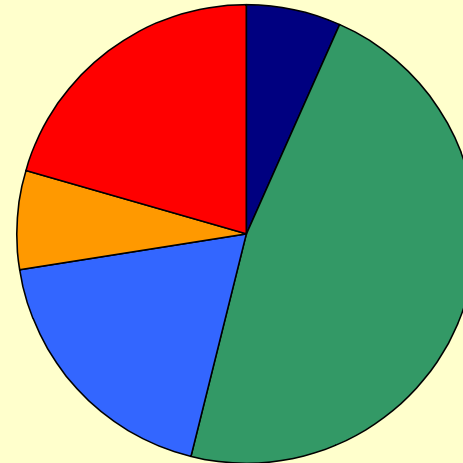
# Sources NOx + PM10 (2003)

**Bronnen NOx**



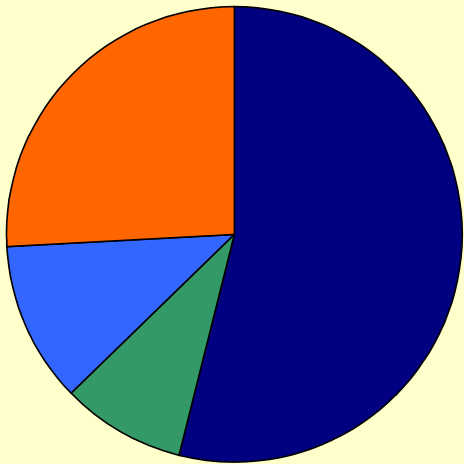
- industrie/energie
- wegverkeer
- scheepvaart
- overigen

**Concentraties NO2**



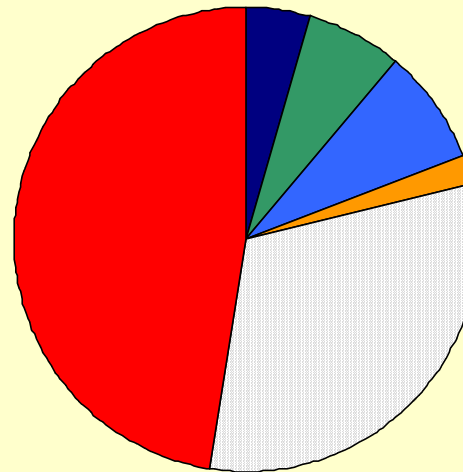
- industrie
- wegverkeer
- scheepvaart
- overigen
- achtergrond

**Bronnen PM10**



- industrie/energie
- wegverkeer
- scheepvaart
- overigen

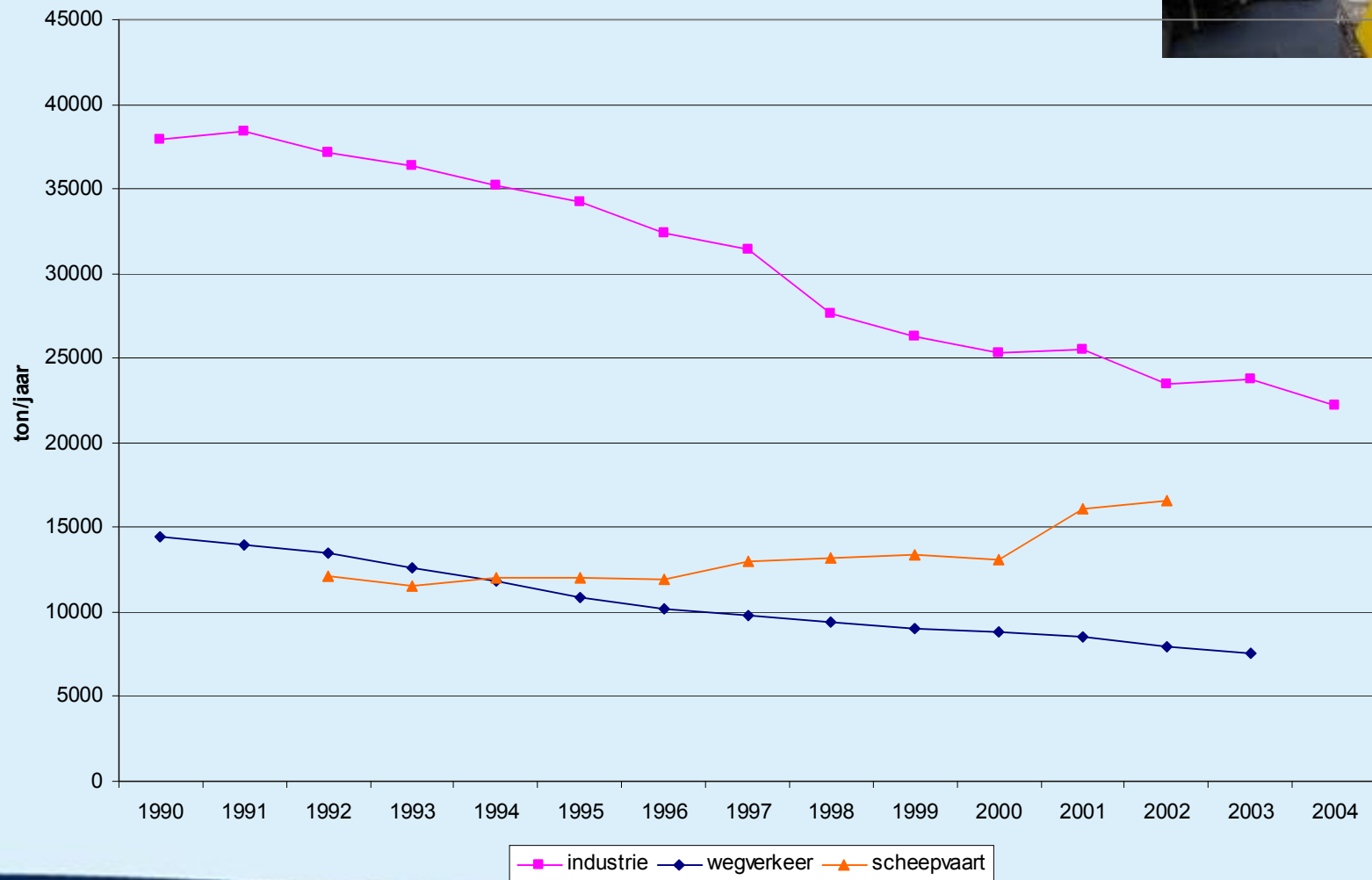
**Concentraties PM10**



- industrie
- wegverkeer
- scheepvaart
- overigen
- achtergrond buitenland
- achtergrond natuurlijk

# NOx-Contribution shipping (illustration)

NOx-emissies industrie, wegverkeer en scheepvaart



# Air quality and climate change program



## Targets:

- Compliance with air quality regulations
- Create further room for sustainable growth
- Drastically reduce CO<sub>2</sub>-emissions

## PoRA participates in:

- Rotterdam Action Program Airquality (RAL/RAP)
- Rotterdam Climate Change program (RCI)

# Means (PoR approach)



- Improve air quality information
- Lobby for stricter emission criteria (reduction at the sources)
- Projects to:
  - Reduce emissions
  - Serve as an example
  - Stimulate R&D
- Offset emissions from port expansion (PMV2)



# Scope and influence



**Port of  
Rotterdam  
Authority**

**Influence: ++**

**Effect: - -**



**Port and  
industrial  
complex**

**Influence: +**

**Effect: +**



**Supply chain**

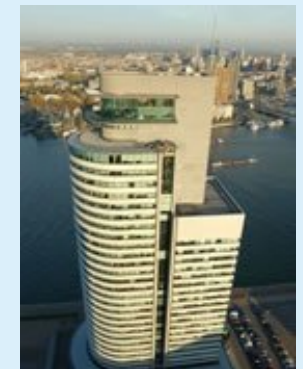
**Influence: +/-**

**Effect: ++**

# Port of Rotterdam Authority: Some projects 2006-2008



- All our vessels on clean truck diesel fuel (EN590)
- New vessels equipped with sooth filters and post-combustion (SCR) treatment
- Use of shore side power own vessels
- Reducing fuel consumption (“saving while sailing”)
- “Clean” cars + incentives for clean leasing
- Carbon footprint calculation



# Projects – Port area

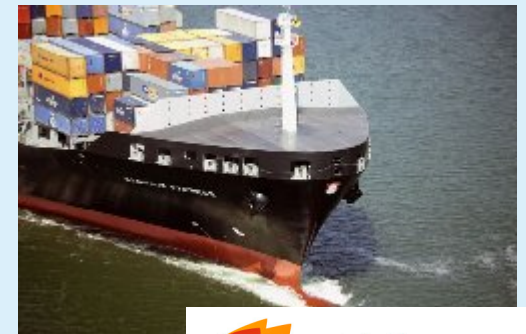
- All nautical service providers on clean truck fuel
- Shore power for inland vessels (now 25%, rest in 2008 and following years),
- Shore power feasibility studies for seagoing vessels
- Clean inland vessel program (CCR 2)
- Co-siting to minimise energy consumption
- Sustainability in tenders and lease contracts
- Carbon footprint monitoring and management
- Carbon Capture and storage (CCS)
- Development container transferium (inland container terminal)
- **Partners in Dutch Ship Emissions Platform**  
**([www.scheepsemissies.nl](http://www.scheepsemissies.nl))**



# Projects in the supply chain



- Modal shift from truck to barge and train (in lease contracts)
- Barge replacement program
- Barge speed reduction program (if needed)
- Environmental zoning for trucks (*in discussion*)
- Environmental indexing for seagoing vessels (*in discussion*)





# World Ports Climate Conference, July 2008

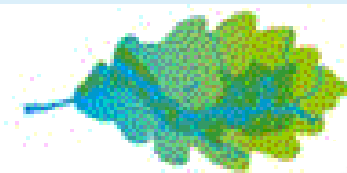


World ports agree on actions to reduce GHG-emissions

Some Topics:

- Support development of clean shipping
- Promote shore side power
- Promote CO2-reduction on terminals
- Use efficient and innovative logistics

• [www.wpccrotterdam.com](http://www.wpccrotterdam.com)



# Pilot SCP Maashaven (inland barges)



- Feasibility study and engineering 2006/ 2007
- Using an innovative and user-friendly concept
  - old and new ships (low / high power demand)
- Consulting major stakeholders
- Designed to serve as an (inter)national standard
- Airquality calculations (by DCMR EPA)
- Investments (1,8 M€) and finance
- Signing the contract with Eneco Energy
- Construction and opening the pilot in november 2007



# Pilot characteristics



- Duration pilot: 2 years (april 2007-april 2009)
- Responsibility PoRA and Eneco energy
- 22 units with 132 connections (400V, 63A, 50 Hz)
- Registration by mobile phone or via internet
- Unique internet site (4 languages) available ([www.walstroom.nl](http://www.walstroom.nl))
- Low costs (25 c€/kWh) for ship
- Injunction for generator use





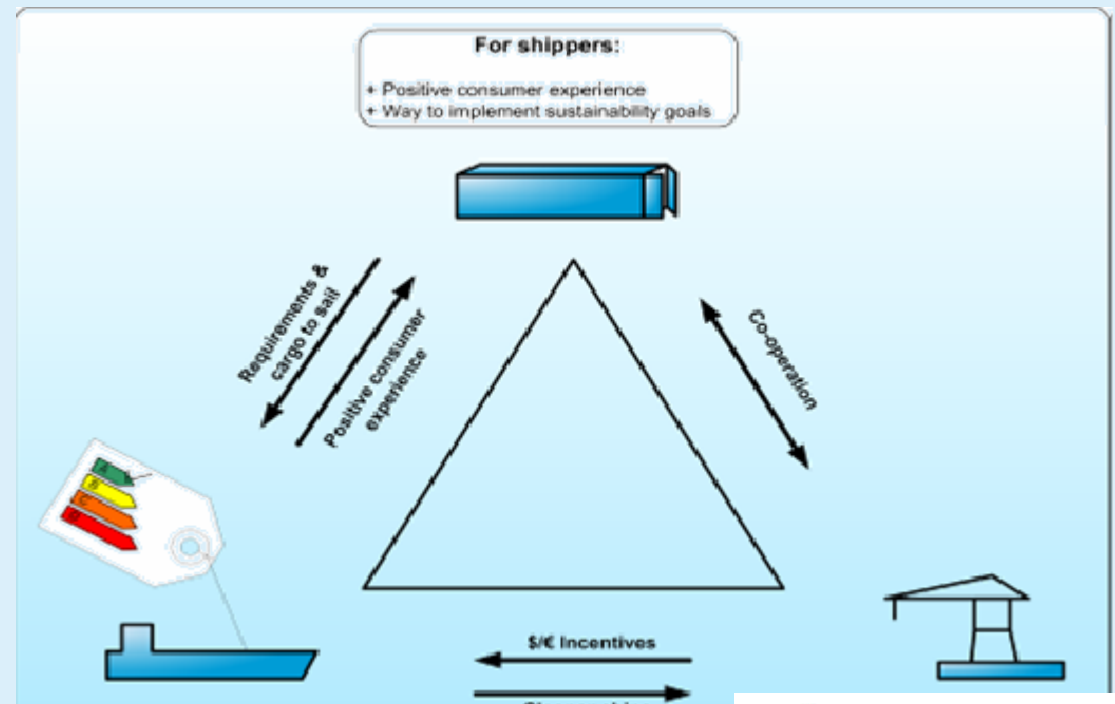




# Environmental indexing ships

## Why indexing a clean ship?

- Promote clean shipping
- Corporate responsibility
- International adopted index
- Discussion with stakeholders



# Air quality and climate change

Thank you for your kind attention