

▶ Instruments to reduce emissions of existing inland barges

Workshop "Emissions from the Legacy Fleet"

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▶ CE Delft

- Independent, not-for profit consultancy, founded in 1978
- Based in Delft, the Netherlands
- Transport, Energy, Economy
- 15+ years of experience with environmental policies for transport
- Clients include European Commission, national governments, ports, NGOs, branch organisations, industry.



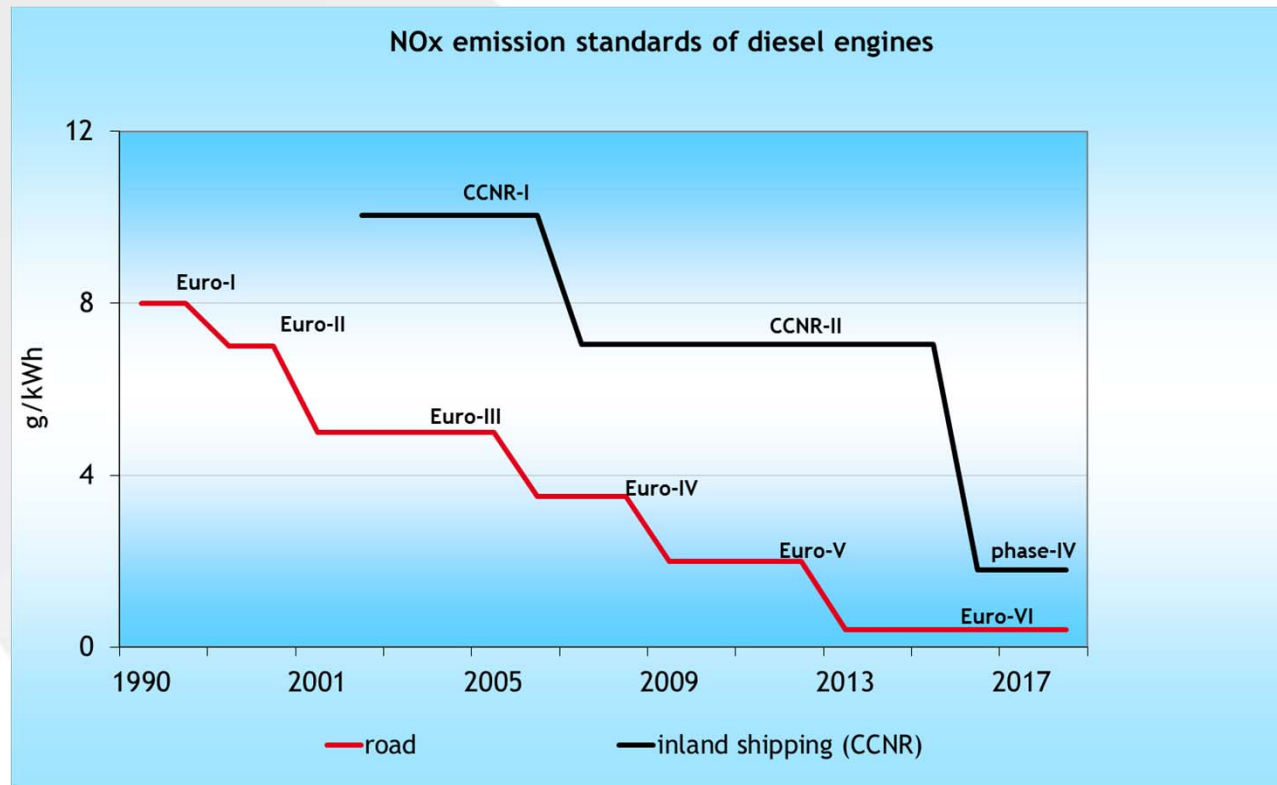
▶ Content

- The need for action
- Possible instruments
- Preliminary evaluation of options
- Conclusions



▶ The need for action (1/4)

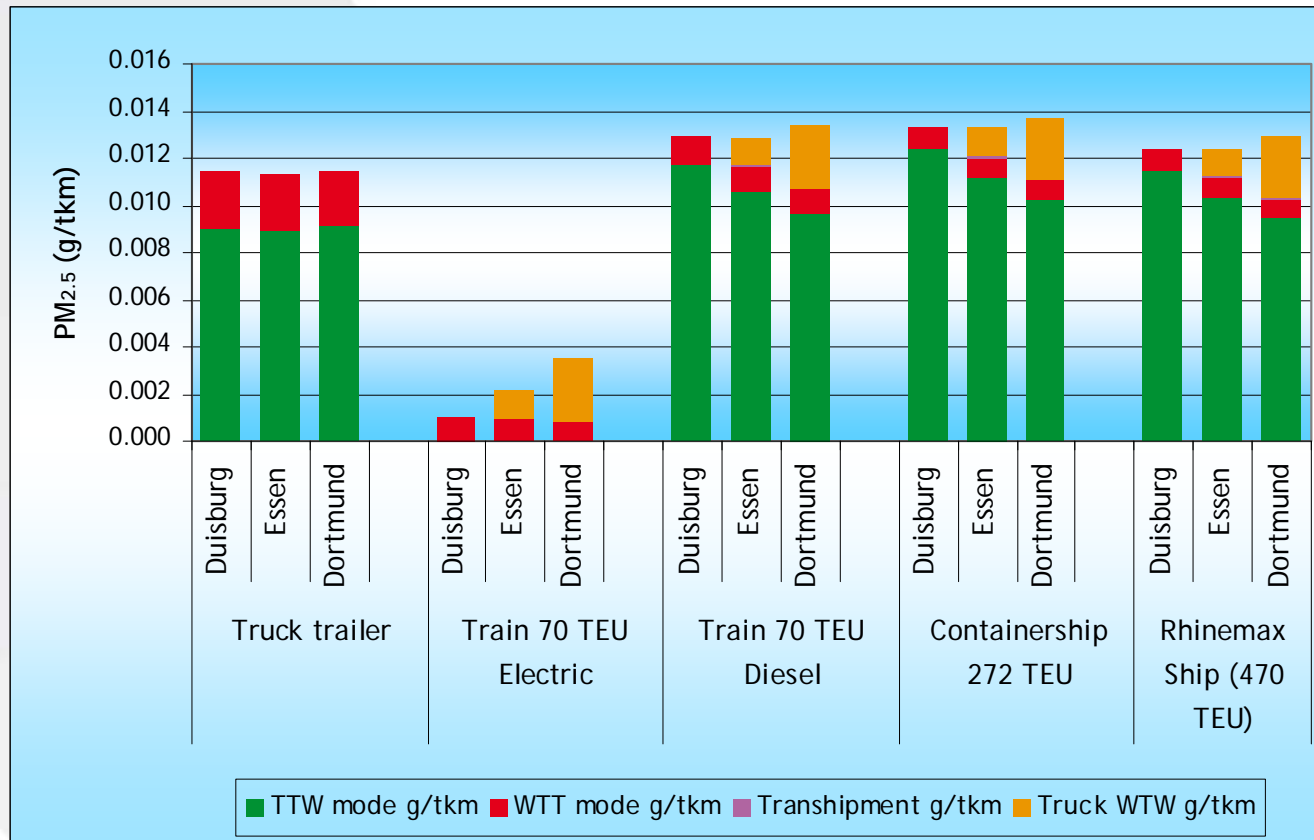
- IWT environmentally friendly for decades
 - GHG emission - better than road transport
 - Air pollutant emission - worrying



- Average year of build: 1978-1983
- Median lifetime: 9-13 years
- Truck: 5-6 years

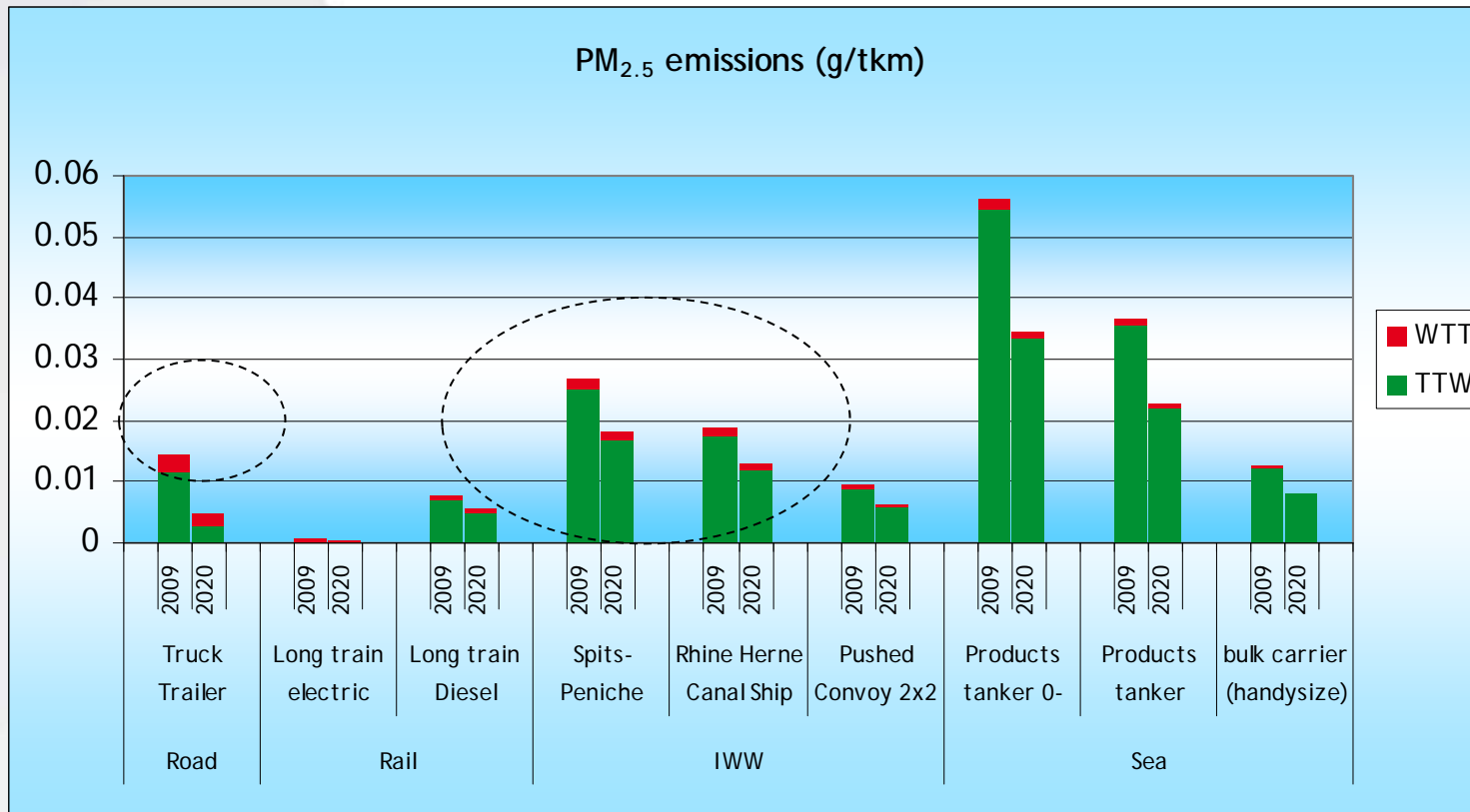
▶ The need for action - emissions compared (2/4)

Rotterdam - Duisburg container transport (2009)



Note: TTW refers to tank-to-wheel, WTT refers to well-to-tank. (Source: CE Delft, 2011)

▶ The need for action - 2020 prospect (3/4)



Note: TTW refers to tank-to-wheel, WTT refers to well-to-tank. Detouring not included. (Source: CE Delft, 2011)

▶ The need for action (4/4)

Market potential significant, but linked to environmental profile

- EU Transport White Paper (50% non-road modes 2050)
 - Internalisation of external costs (2020)
- Port of Rotterdam (45% container transport by ship 2033)
- Air quality along corridors need to be maintained
- “License to operate”

Measures new engines needed

- EC proposal from phase-IV expected in 2012
- Uptake is slow (200 per year)



Environmental pole position and preference from ports and governments?

- Emissions from existing engines need to be addressed as well

▶ Instruments (1/5)

1. Regulation (command and control)
 - Emission standards existing engines
 - Environmental zones
 2. Economic instruments
 - Emission taxation
 - Differentiation of port dues
 - Subsidies
 3. Voluntary initiatives/agreements
 - Green Award
- Subsidies in recent years ineffective
 - Limits of EU state aid rules
 - No business case: budgets not used

▶ Instruments - Regulation (2/5)



- Obligatory emission standards for existing engines
 - Not applied in EU transport policy
 - Examples: IMO, IPCC Directive, CCNR (transition periods)
 - Measure should be applied at EU level
- Environmental zoning
 - Alternative to emissions standards with same effect
 - Port of Rotterdam: CCNR-2 in 2025
 - only in context of difficulties EU air quality Directive.
 - Port perspective:
‘license to operate’ or unattractive from economic perspective?

▶ Instruments - Economic instruments (3/5)

Emission taxation

- Efficient and effective measure to reduce emissions
- Norway, to reduce Nox emissions
 - Government tax 1,9 €/kg NOx
 - Business fund
 - Emissions subject to environmental agreement pay 0,5€/kg NOx
 - Obligation to apply measures when ROI<3 years
 - 80% support from fund
 - Emissions reported: bunker notes and engine certificates
- Principles could be useful for inland shipping EU
 - Taxation is a national issue
 - Administration costs

▶ Instruments - Economic instruments (4/5)

- Environmentally differentiated port dues
 - Port of Rotterdam: 10% increase for CCNR-1 and older per 2012
 - Yields investment in IWT innovation projects
 - Example for SCR shows that current port dues are too low (3-4 times)

	Average incentive needed for SCR investment on one return trip	2011 port dues return trip	Mark-up of port with <i>twice</i> the current port dues
1000-1500 tonne	760	225	450
1500-3000 tonne	1386	405	810
>3000 tonne	2097	630	1260

Note: port dues Port of Rotterdam.

The average incentive needed is based on 50€/kW investment costs, 3€/Mwh operational costs and a depreciation period of 3 years and 8% interest.



▶ Instruments - Voluntary instruments (5/5)

- Improved environmental performance in long term contracts (e.g. Akzo, Bayer)
 - Long term contract is solid basis for shipowner
 - Half of contracts negotiated on spot market
- Investment shipowner based on additional rates payed on spot market
 - Example of subsidies..
 - Clear shipper interest (\$) is key for Green Award
- Spot market needs instrument for awarding (\$) environmental performance (Green Award)
 - How organized with flexible cargo rates (no price agreement)?
 - IWT is mainly a business-to-business market

▶ Preliminary evaluation of options

- Effectiveness
 - Standard most predictable
 - Voluntary system: unpredictable response
 - Economic instrument: depending on the incentive
- Cost-effectiveness
 - Economic instruments most cost-effective
 - Standard relatively blunt (e.g. small ships)
- Legal constraints
 - Instruments associated with legal constraints
Mannheim convention, internal competition rules
 - Needs to be investigated more in-depth

▶ Conclusions

- The air pollution profile of inland waterway transport must improve
- The air pollution profile of *existing* engines must improve to close the gap with road transport
- Several instruments can help to reduce emissions of the existing fleet.

None of them is the “silver bullet”

- Emissions standards (legal constraints and costs)
- Environmental zones (legal constraints)
- Emission taxation (taxation is nat. issue, Mannheim, admin.)
- Port dues (could be a partly solution)
- Subsidies (not effective as a single instrument)
- Voluntary agreements (no guarantee)