

# Green Hub: sustainable supply chain management

Huib van Essen - CE Delft

The Future of Logistics Hotspot Limburg - 22-11-2011

## ▶ Outline

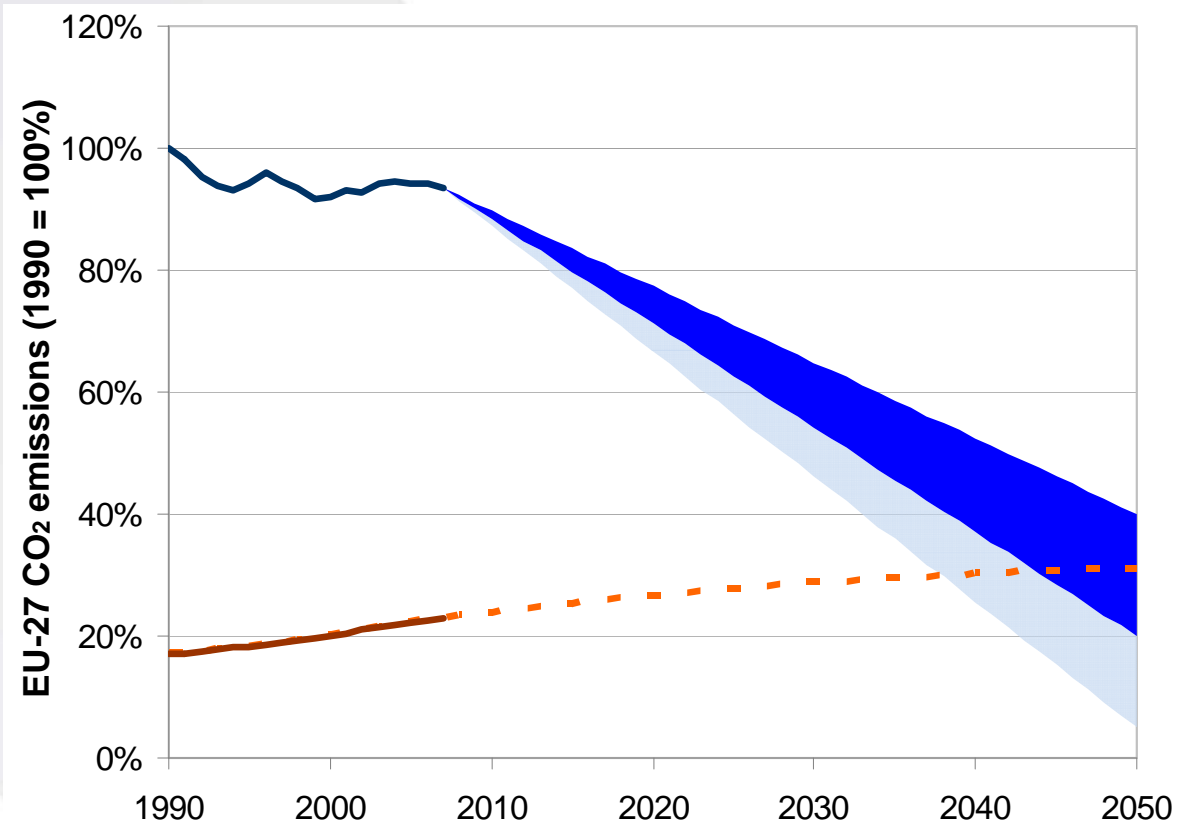
- Sustainable transport: what are we talking about?
- Context: EU White Paper
- Increasing demand for Green Transport
- Comparison of transport modes: STREAM
- Further greening of the supply chain
- Turning theory into practice
- Green Hub Venlo: Activity Based Carboning

## ▶ Sustainable transport: What are we talking about?

Main challenges for making transport more sustainable:

- Energy, dependency on fossil fuels
- Climate change
- Air Pollution
- Noise
- Accidents
- Safety
- Economic impacts (economic benefits, external costs)
- Accessibility - congestion

▶ Business as usual is no option



## ▶ Context: EU White Paper

### Low carbon

- 60% GHG reduction in 2050 compared to 1990 (overall: 80-95%)
- CO<sub>2</sub>-free city logistics in major urban areas by 2030

### Multimodal

- Long distance road freight (>300 km) to rail and water: 30% in 2030 and more than 50% in 2050
- Efficient and green freight corridors
- Multimodal TEN-T: core network in 2030, comprehensive network in 2050

### Efficient

- Improved traffic management and interoperability
- Road accident fatalities to zero in 2050
- Full application of user/polluter pays principles (internalisation)



## ▶ Increasing demand for Green Transport

- Port of Rotterdam:
  - Modal shift policy related to Maasvlakte 2
  - Environmental zones
- Sustainability as business driver:
  - Lean and Green Award:
    - > 100 companies, including 61 shippers
    - 20% GHG reduction as per 2012
  - FloraHolland (green rail, airconditioned containers)
  - Philips (containers)
  - Fresh corridor (e.g. Venlo)
- Requires solid data basis for accounting emissions

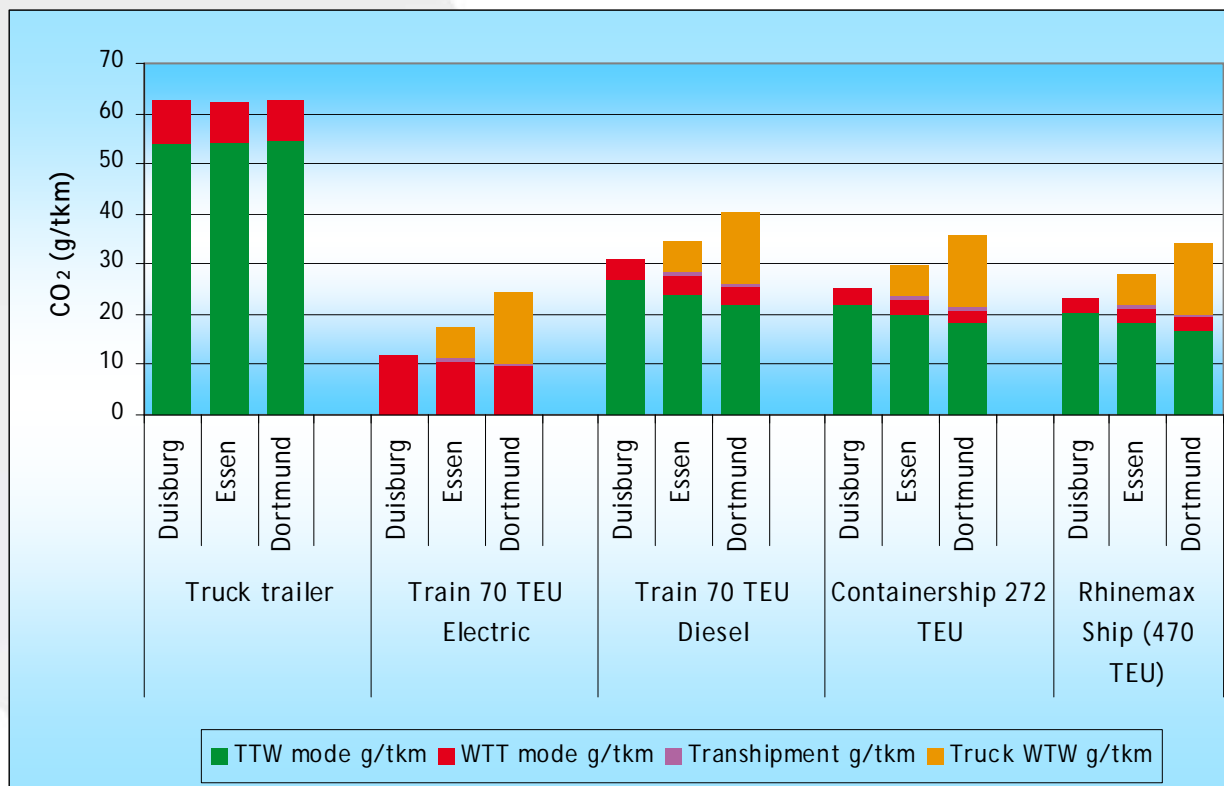
## ▶ Comparison of transport modes: STREAM

- Types of emissions:
  - CO<sub>2</sub> - climate change
  - NO<sub>x</sub> and PM10 - air quality
  - Per tonne-km
- Fair comparisons require:
  - Emission data
    - Well-to-wheel approach
    - Real life emission factors
    - Realistic assumptions on emission technology & fleet renewal
  - Logistic data
    - Door-to-door (incl. transshipment and pre- & end-haulage)
    - Realistic vehicle size
    - Realistic load factors and vehicle utilization
    - Detour factors and empty trips



## ▶ Comparison of modes on CO<sub>2</sub>: STREAM

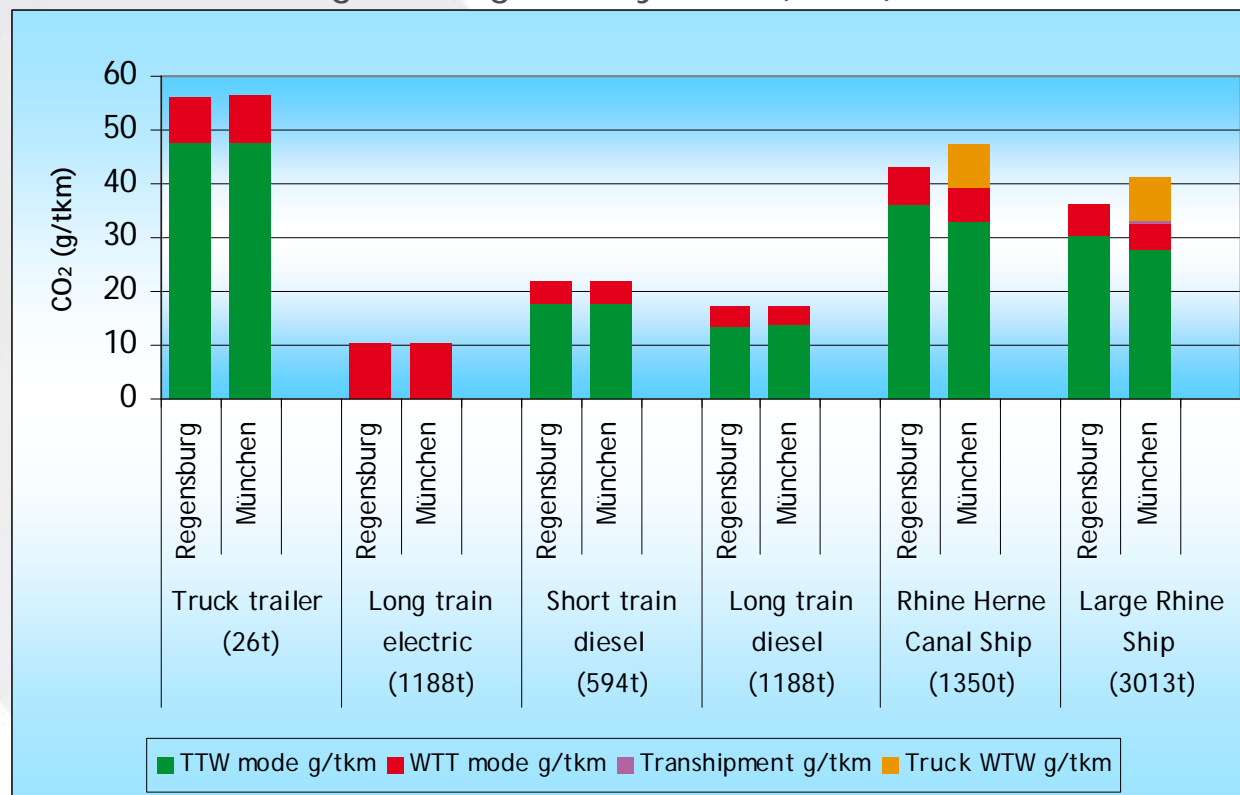
Rotterdam - Duisburg: containers (2020)



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

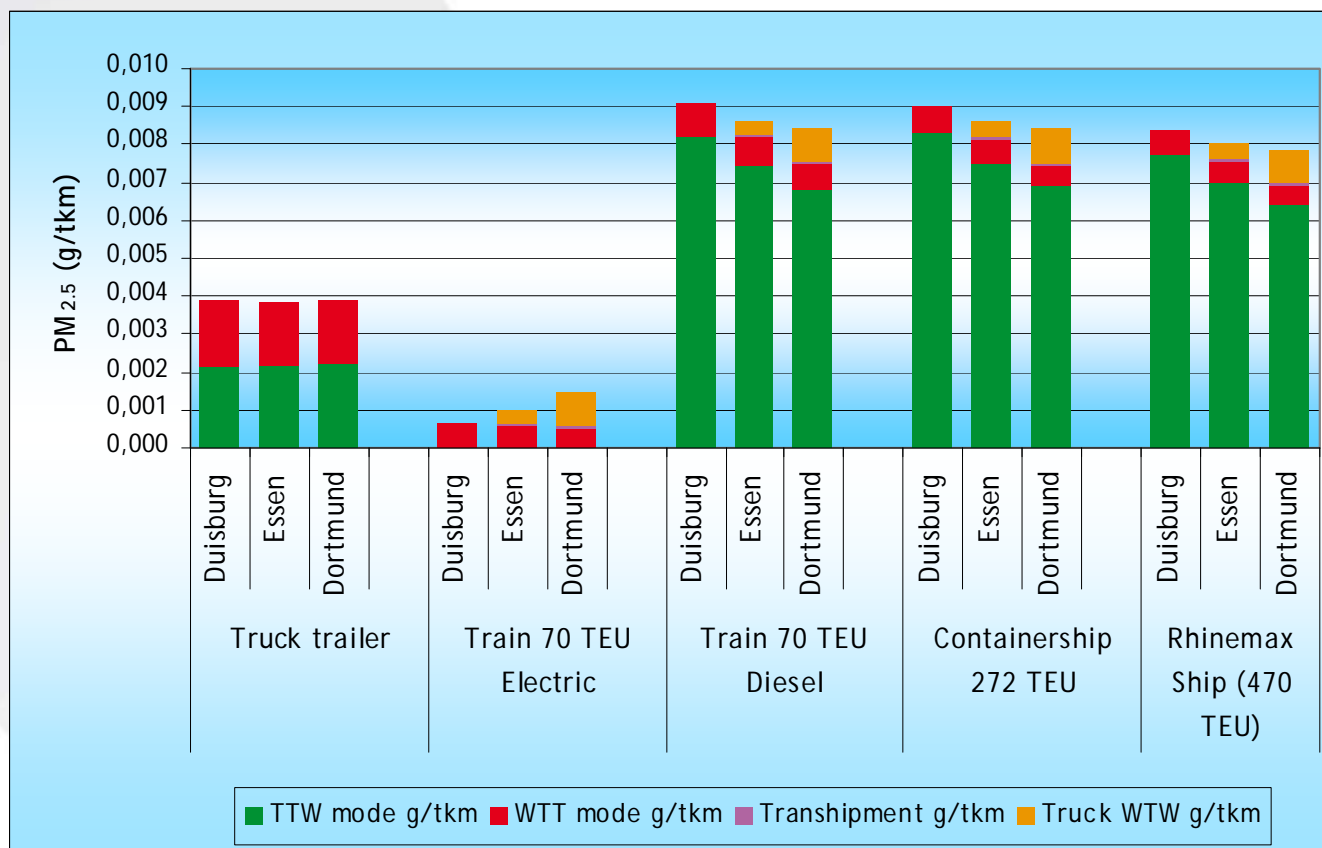
## ▶ Comparison of modes on CO<sub>2</sub>: STREAM

Amsterdam - Regensburg: heavy bulk (2020)



## ▶ Comparison of modes on PM<sub>2.5</sub>: STREAM

Rotterdam - Duisburg: containers (2020)



## ▶ Further greening of the supply chain



### EU policy:

- Next phases in emission regulations (e.g. Euro-VI)
- CO<sub>2</sub> policy (regulation/labelling for HGV, fuel taxation, ETS, etc.)
- TEN-T policy

### National and local:

- Lean&Green: Duurzame logistiek
- Environmental zoning in more cities
- Modal shift targets (e.g. Port of Rotterdam)

### Innovation:

- Fuel efficiency improvements (HGV to 26 l/100km, driver training)
- Long term options: fuel cells, hybrid, electric, modal shift, some biofuels
- Logistics optimisation

## ▶ Turning theory into practice

### Environmental performance as business opportunity

- Saving fuel costs
- Innovative logistic services
- More added value

### Learning by doing:

- Monitoring and accounting GHG emissions (e.g. Green Hub Venlo)
- Innovation in technology and processes
- Evaluation of implemented measures



## ▶ GreenHubVenlo

### Activity Based Carboning

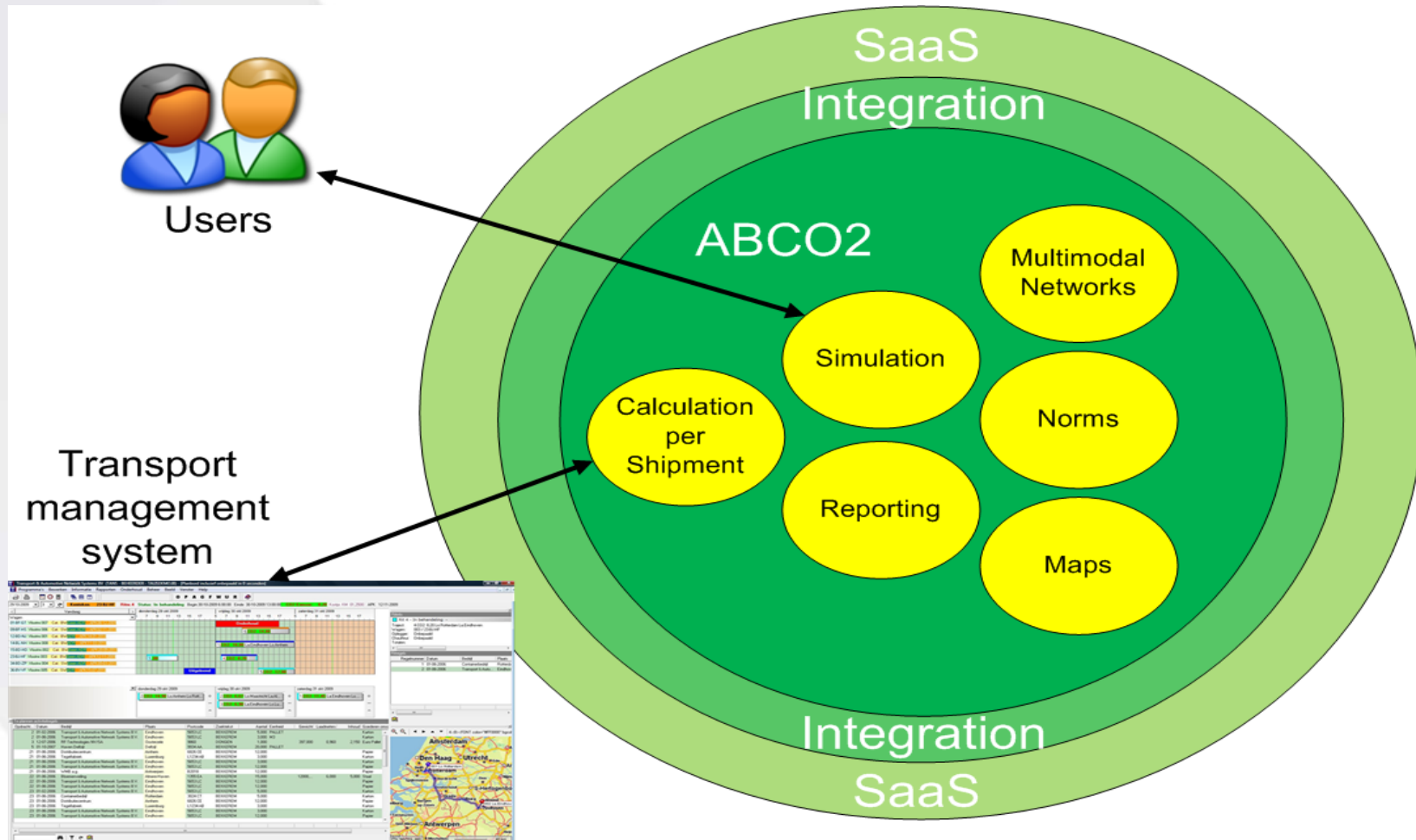
- Detailed Global, Multimodal, normative carbon emission calculation
- To be approved by CE Delft
- Software as a Service
- Input: shipments
- Process: legs, CO<sub>2</sub> norm per leg
- Output: CO<sub>2</sub> emission per shipment
- Periodic: simulation ' what if' other modalities were used



### Standards

- PAS2050-protocol (Product Foot Print)
- STREAM
- Milieubarometer

## ▶ Activity Based Carboning (ABC)



▶ Thank you for your attention!

Huib van Essen

Manager Transport CE Delft

essen@ce.nl