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EU Transport GHG: Routes to 2050?

Modal shift and decoupling transport growth from GDP growth for freight transport

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Partners

www.eutransportghg2050.eu



Overview of presentation

1. Modal shift freight transport

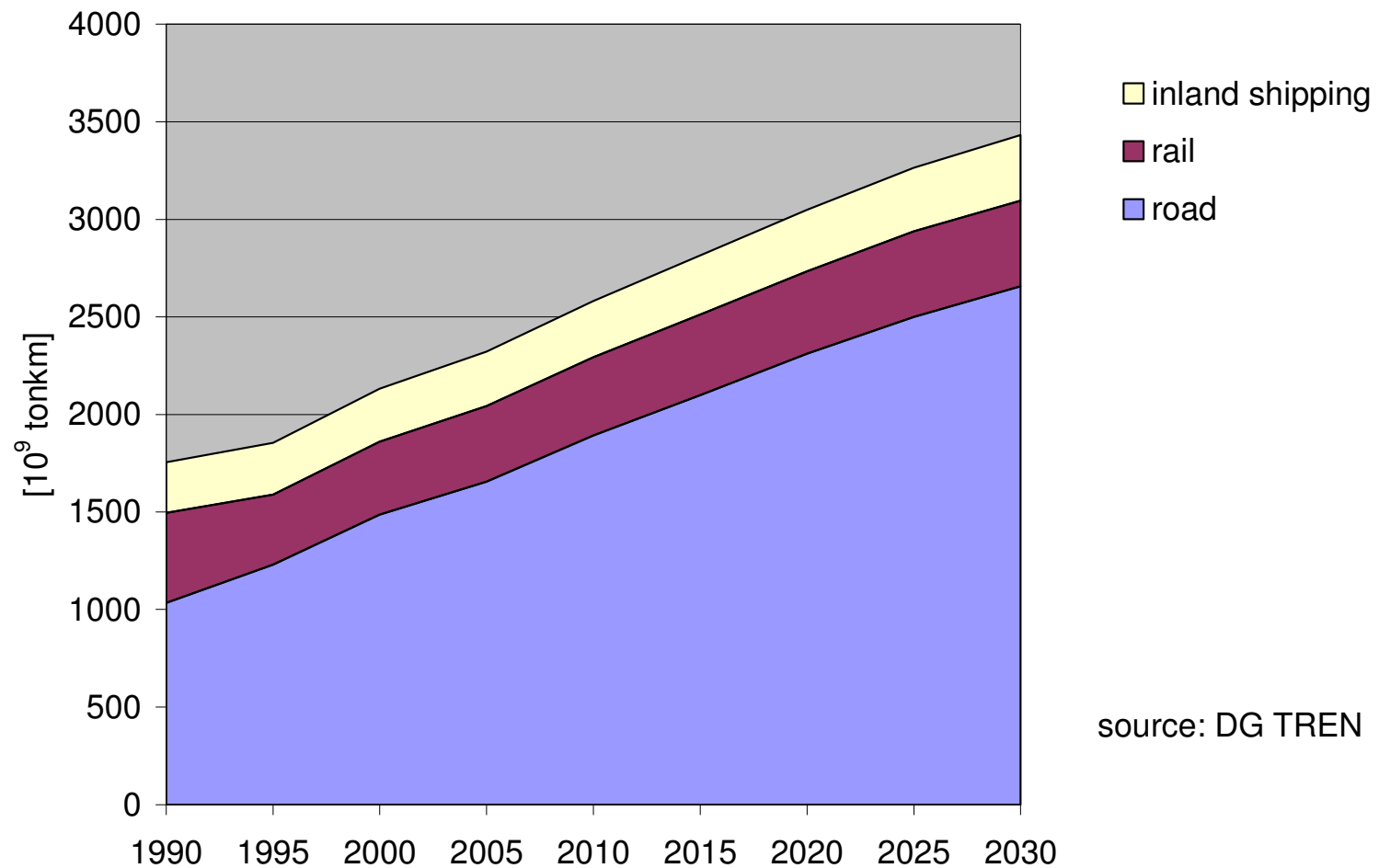
- Trends
- Drivers
- Modal comparison
- Potential of modal shift
- Policy options

2. Decoupling freight transport from GDP growth

- Trends
- Drivers
- Policy and barriers options

3. Conclusions/discussion/questions

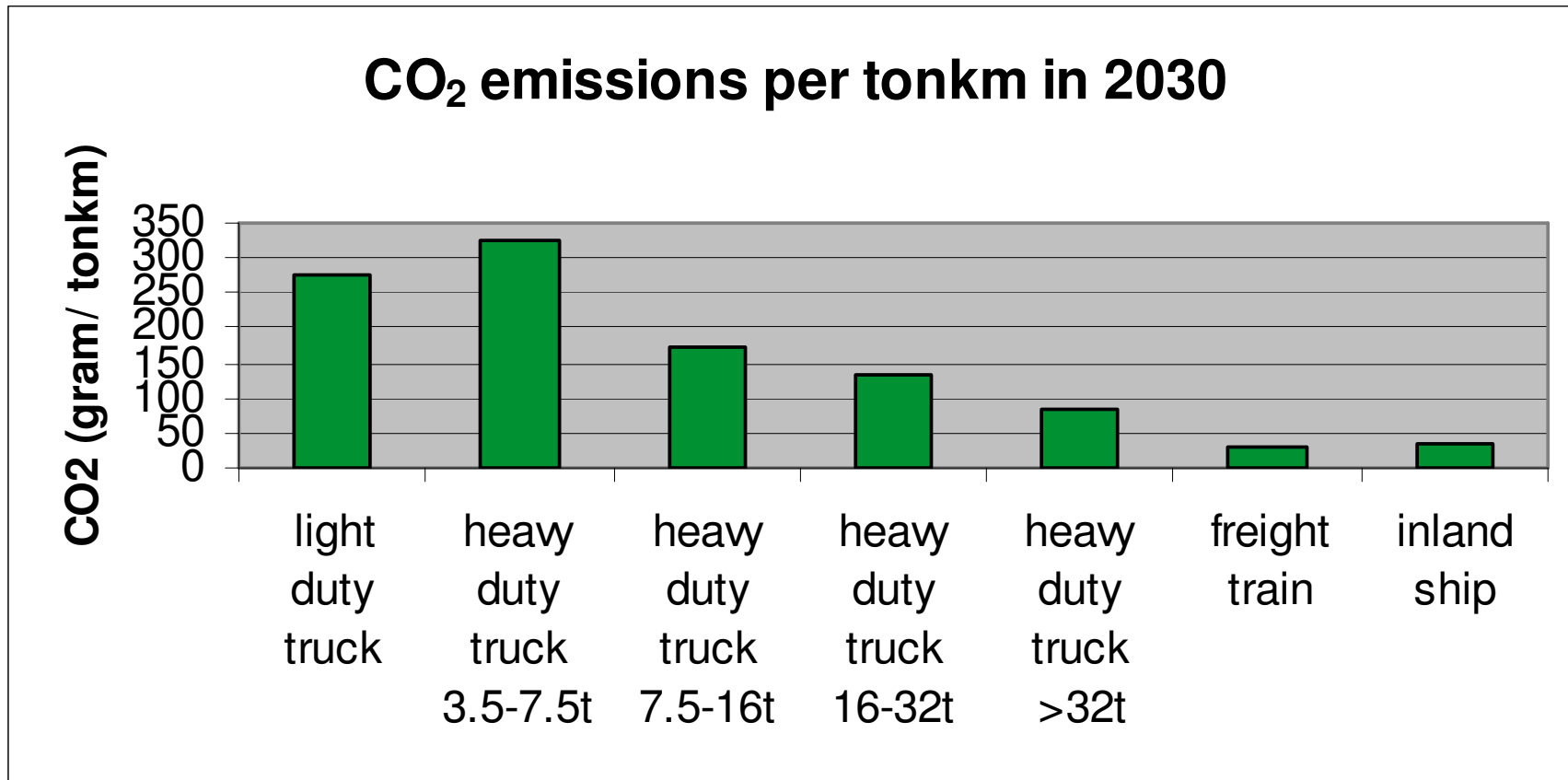
Projected development freight modal split



Drivers behind trends in modal split

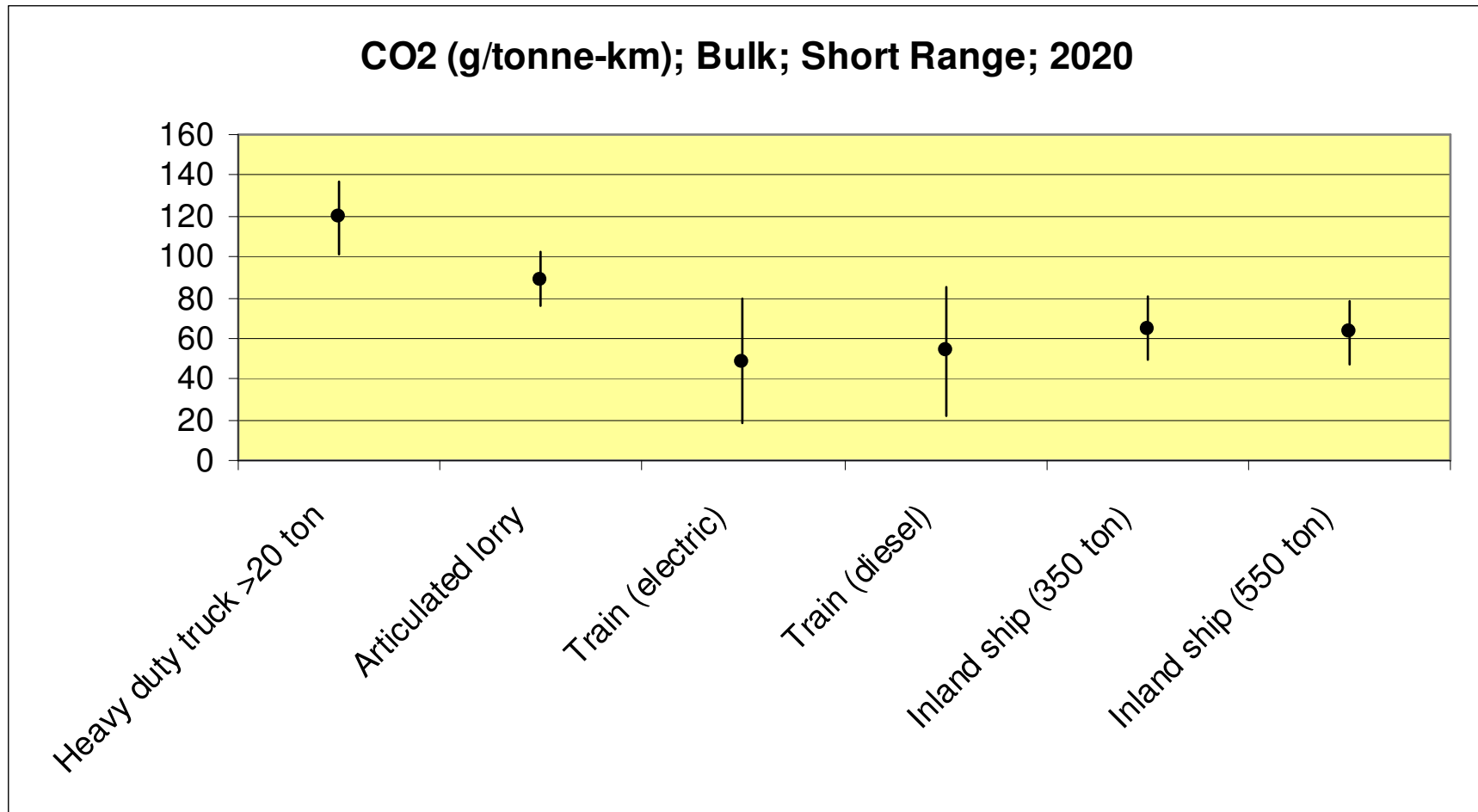
- Road took more advantage of the dismantling of trade barriers
- The road sector is liberalised to a great extent; liberalisation rail resulted in close of some tracks and higher rates due to charges.
- Increasing demand for 'just-in-time' delivery, speed and flexibility, usually better served by road.
- Share of perishable and high value goods is rising , usually better served by road.
- Changing spatial planning and infrastructure development: many destinations can only be reached by road.
- Large share of road is short distance, for which rail or inland waterways can hardly compete.
- Lack of standardisation of convenient and fast connections between inland waterways and rail.

Modal comparisons (1) – EU averages



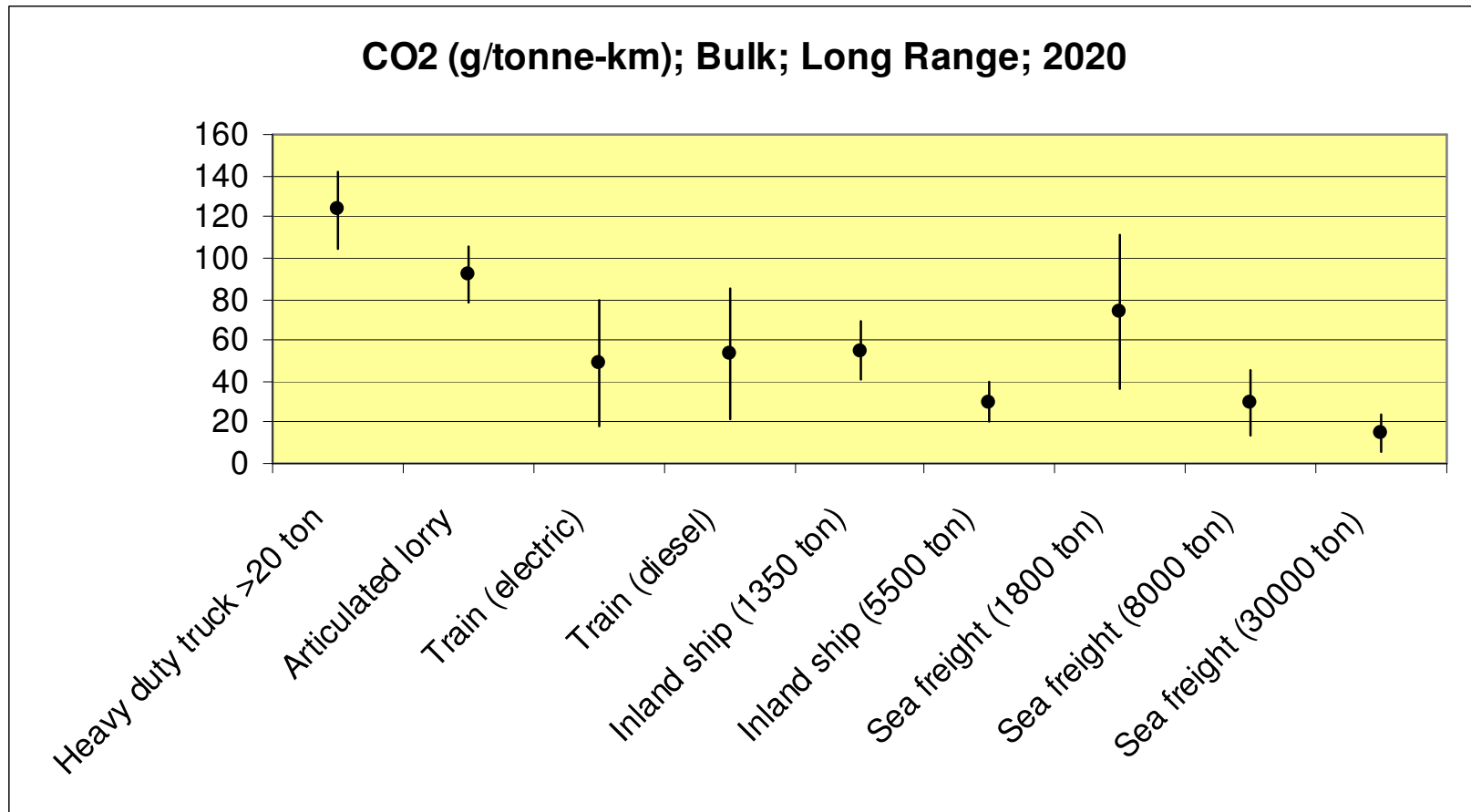
Source: Tremove

Modal comparisons (2) – NL specific markets



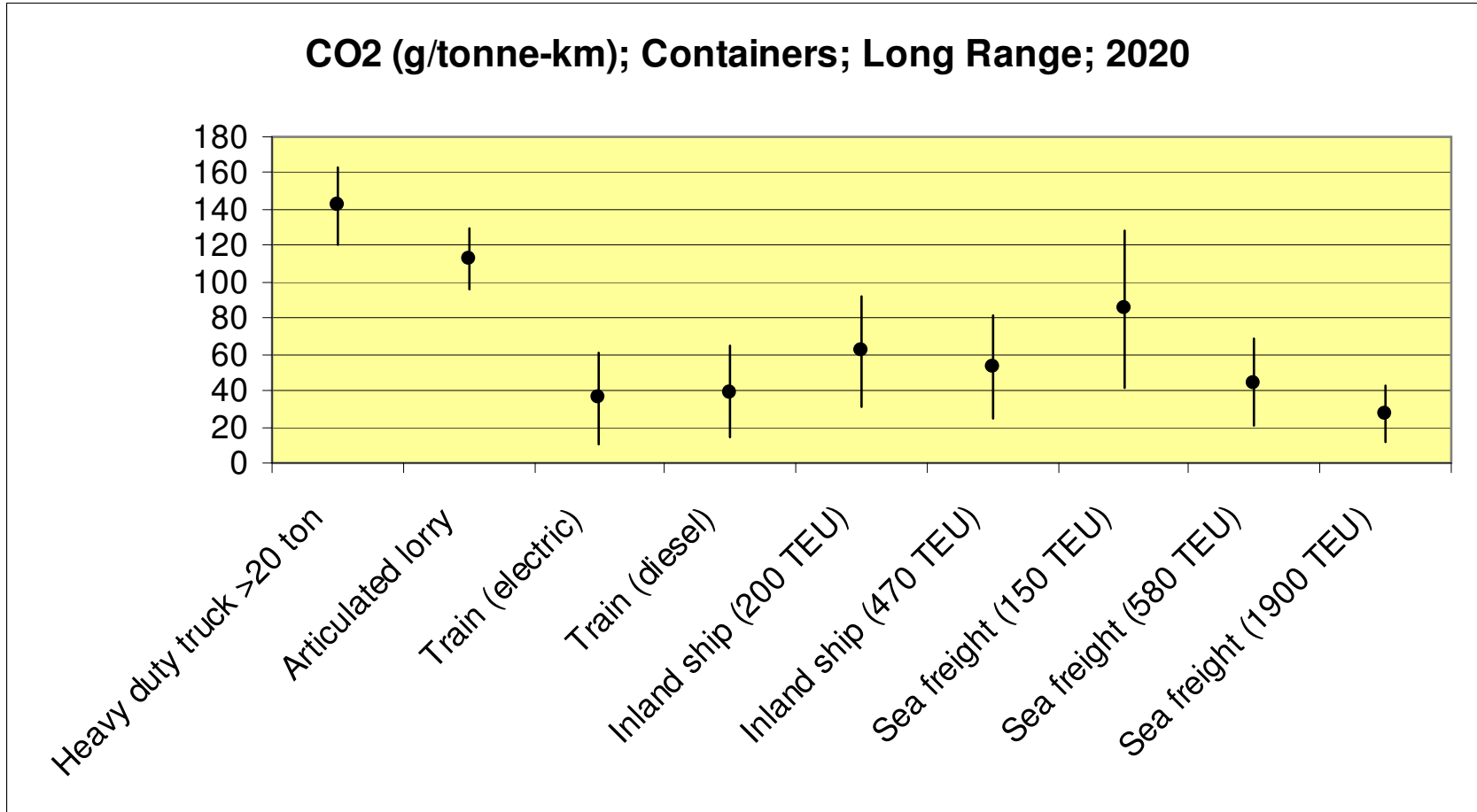
Source: STREAM

Modal comparisons (3) – NL specific markets



Source: STREAM

Modal comparisons (4) – NL specific markets



Source: STREAM

Conclusion from modal comparisons

- Comparisons depend on assumptions:
 - Comparing modes or complete transport chains
 - Vehicle capacity and utilisation
 - Long term emissions trends
- Higher capacity vehicles have relatively lower emissions per tkm
- Rail and the higher capacity ships have lowest emissions per tkm
- Road transport emissions per tkm are on average the highest (except air freight), logistic characteristics are decisive.
- Vehicle utilisation rail and inland shipping higher than road: modal shift may reduce their vehicle utilisation => lower reductions
- The emissions from air freight are an order of magnitude greater than surface bound modes
- Modal comparison at the long term uncertain.

Potential modal shift freight transport

	Reduction CO ₂ emission	
	STREAM	TREMOVE
Heavy duty truck to rail	55%	78%
Articulated lorry to rail	35%	66%
Air to Articulated lorry	89%	n.a.
Air to rail	93%	n.a.

- Potential shift in tkm found in literature: 9% of road volume
- Potential CO₂ reduction of modal shift road to rail found in literature: about 4% in 2050.
- No agreement on the overall potential CO₂ reduction of modal shift freight:
 - some: very limited potential against high cost
 - others: up to 23% CO₂ reduction potential
- Various co-benefits

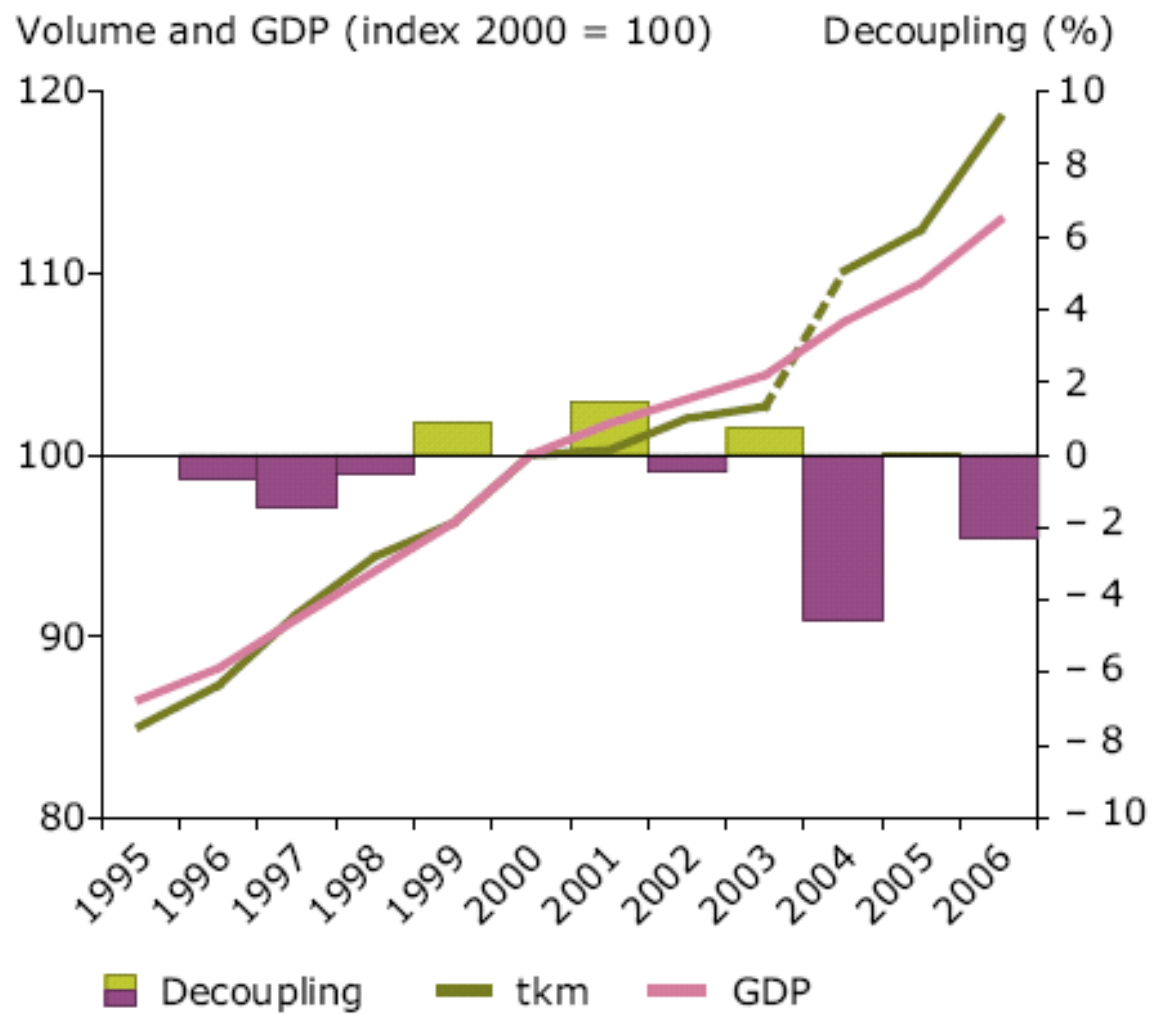
Policy that can contribute to modal shift

- Infrastructure policy
- Spatial policy
- Improving interconnectivity of intermodal networks
- Transport pricing

Decoupling

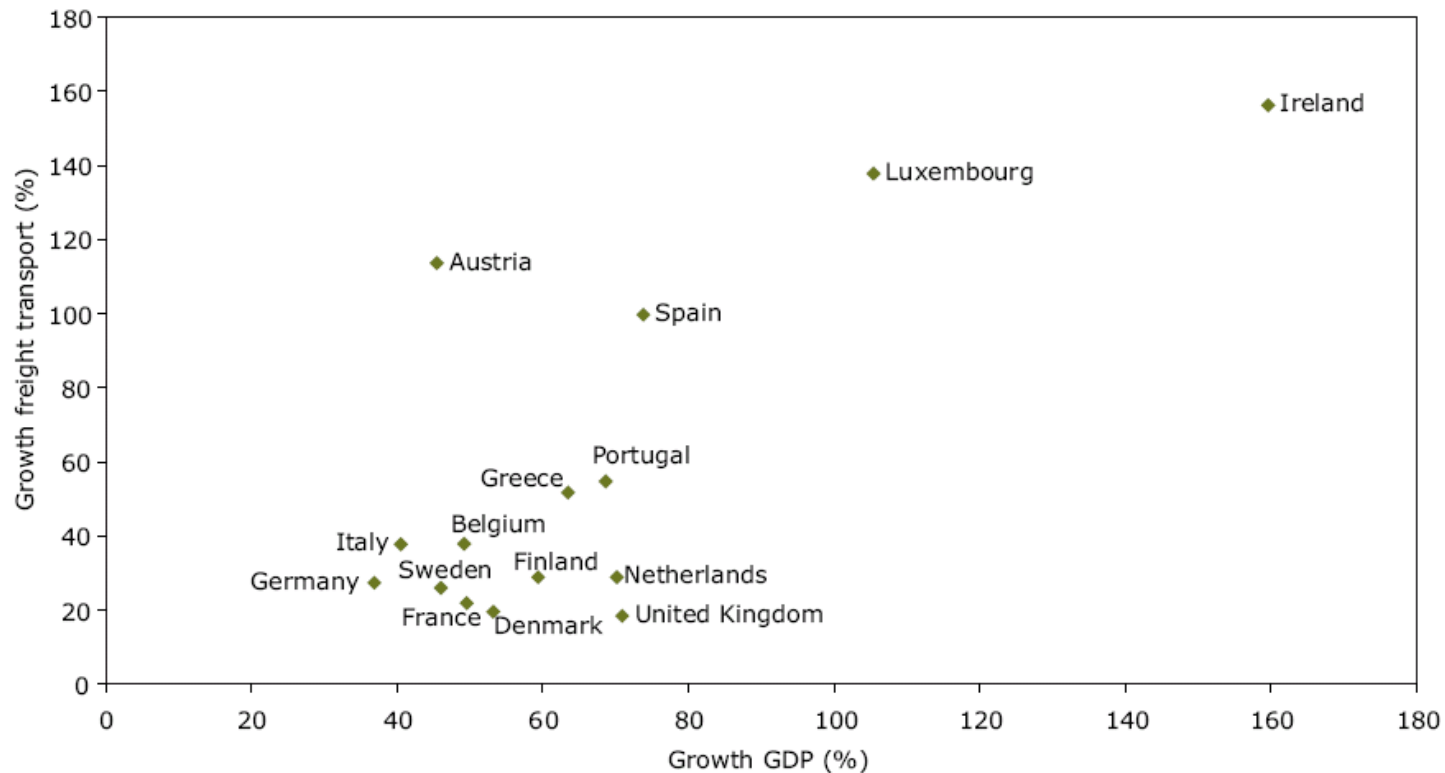
- Demand growth is the main driver behind the growth in GHG emissions from freight transport
- Contents:
 - Trends
 - Drivers
 - Policy options and barriers

Current trend: no decoupling



GDP growth vs transport growth

EU-15: Growth freight transport (1991–2002) – growth GDP (1991–2002)



Note: The figure shows the correlation between growth in the economy and growth in freight transport. The correlation is visible from the distribution, but it is also clear there is a relatively broad range of different economic growth rates that can lead to the same growth in freight transport.

Source: EEA, 2006, Fact sheet 13, 2005 data sheet (based on Eurostat, 2004).

Main drivers behind freight transport growth

- Each tonne of final product is moved more often in the production chain.
- The concentration of production and inventories has resulted in an increase in the average haul distance.
- The increased purchasing power increases consumer choice and demand for goods that are increasingly sourced globally.
- Western economies are characterized by a move from production economies to knowledge service based economies.
- Firms minimize their total production costs by searching for economies of scale in production and distribution, locational advantages and reduced costs for warehousing.
- If transport costs decrease companies will use more transport in the optimum thereby save money on warehousing and production costs.

Policies and barriers

- **Urban planning**, e.g. compact cities to avoid urban sprawl and spatial optimization of the location of industries and distribution centres.
- **Transport pricing**, e.g. infrastructure pricing: higher (variable) prices tend to curb down transport growth (elasticity about -0.8).
- **Infrastructure policy**: infrastructure investments have the risk to increase transport growth.
- **Speed policy**: reduction of travel speed, e.g. by lower speed limits, decrease transport demand.
- **Other policies**, e.g. all types of regulation that prevent or discourage local production.
- **Main barrier for curbing freight transport demand growth**: the risk of adverse economic impacts.

Conclusions

- **No modal shift to rail and water expected.**
- **Significant differences in average GHG intensity of modes.**
- **Impact of modal shift depends also on logistical parameters.**
- **Estimates for modal shift potential ranges from 4 to 23%.**
- **Demand growth main driver behind GHG.**
- **Globalisation, GDP growth and low cost of transport main drivers behind freight transport growth**
- **Main policy options:**
 - **Spatial and urban planning**
 - **Infrastructure policy**
 - **Transport pricing**

Questions

- How much freight modal shift is possible till 2050?
- What do you see as GHG reduction potential of freight modal shift?
- What would be needed for a substantial freight modal shift?
- Do you agree that freight transport growth is the main driver for freight transport GHG emissions?
- What do you regard as the main options for decoupling freight transport growth from GDP growth?