

# Vehicle efficiency: High Capacity Vehicles

## Decarbonising Road Freight expert workshop

Dr Raimonds Aronietis, Policy Analyst  
International Transport Forum

28 June 2018, Paris, France

## Contents

- ITF Working Group on ITS for HGVs
  - Economic and political developments
  - Environmental impacts of transport
  - Future solutions and solutions available today
  - High Capacity Vehicles: Why?
  - Trends in HCV adoption
  - Overcoming barriers
  - Regulatory accommodation
-

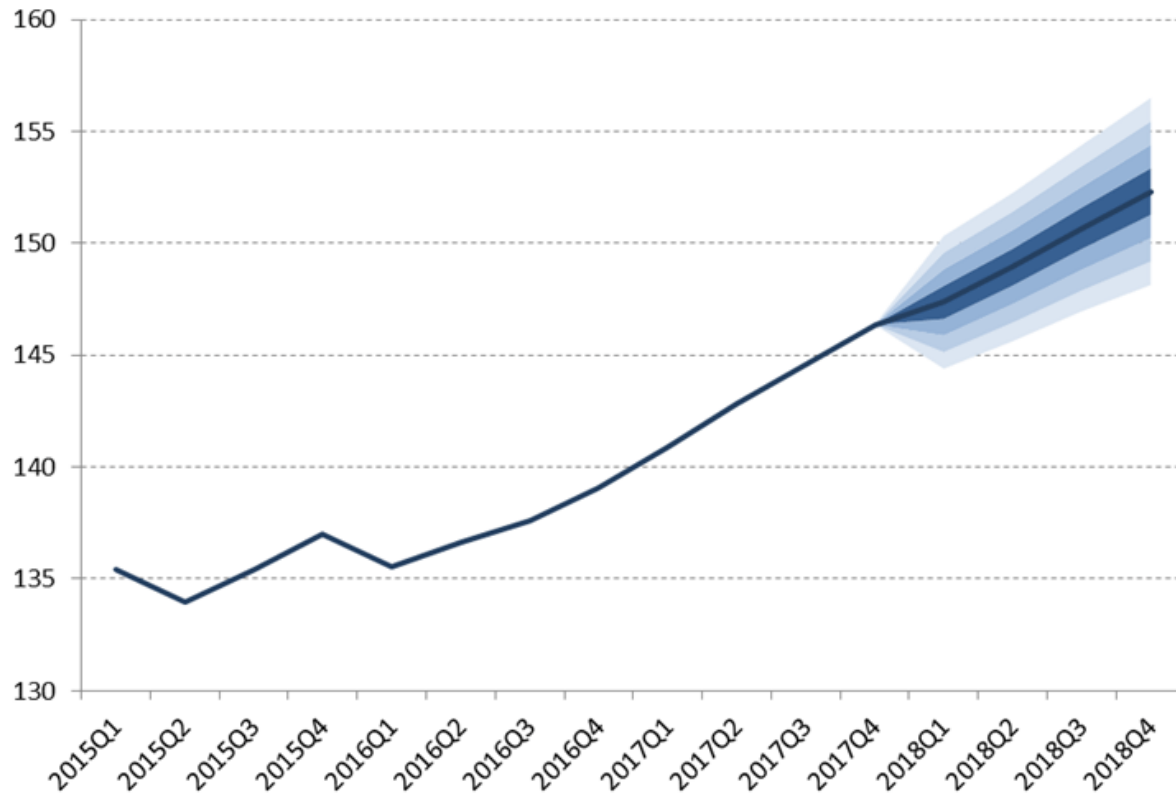
## ITF Working Group on ITS for HGVs

- One of the Working Groups, the first Common Interest Group
  - Participants from: **Sweden, Finland, Denmark, Australia, Norway**, South Africa, New Zealand, United States, France, United Kingdom
  - Topic tackled: *The implementation of Intelligent Transport Systems to influence network access for heavy goods vehicles has the potential to make High Capacity Transport, and its promise for increased efficiency and performance, politically and societally more acceptable. How can a better regulatory framework support this shift?*
  - Case study-driven approach that will culminate with development of a package for policy makers.
-

# Economic and political developments [1]

## Volume of world merchandise trade and forecasts, 2015Q1-2018Q4

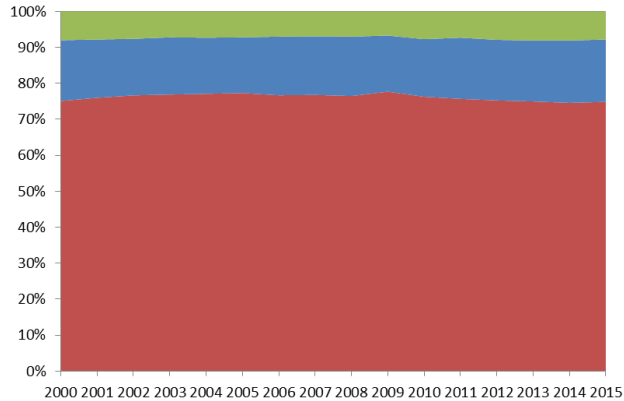
Seasonally adjusted volume index, 2005=100, source: WTO



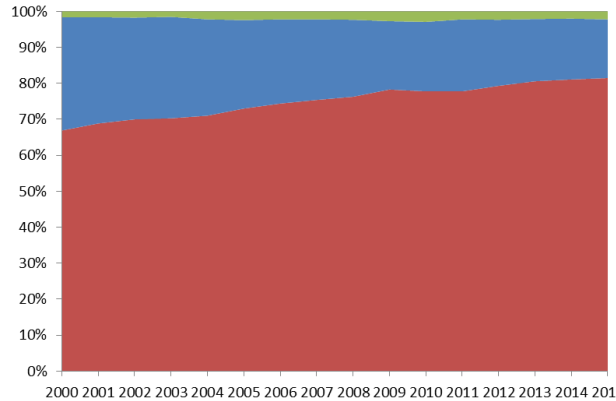
# Economic and political developments [2]

**Modal split of inland freight transport modes in different regions, % of tkm, data source: ITF member countries**

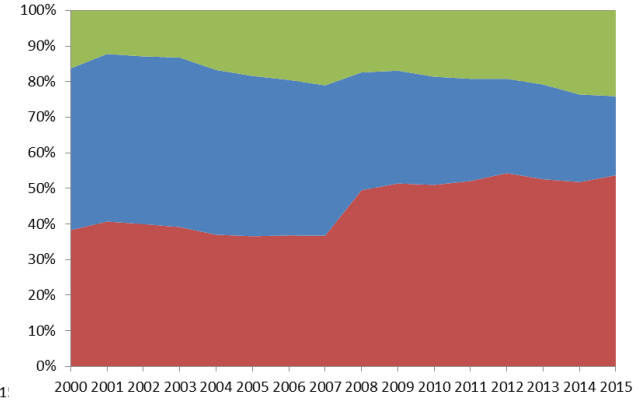
Western Europe



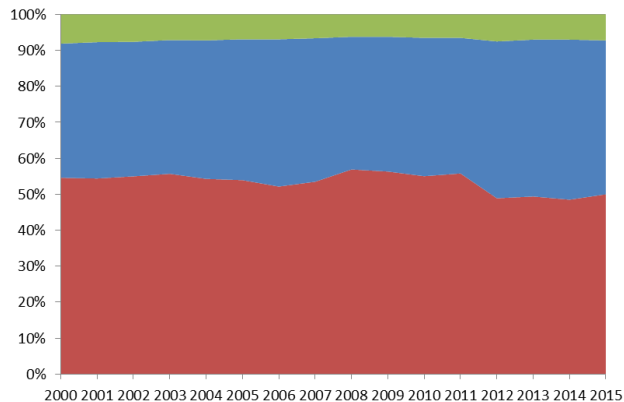
Central and Eastern Europe



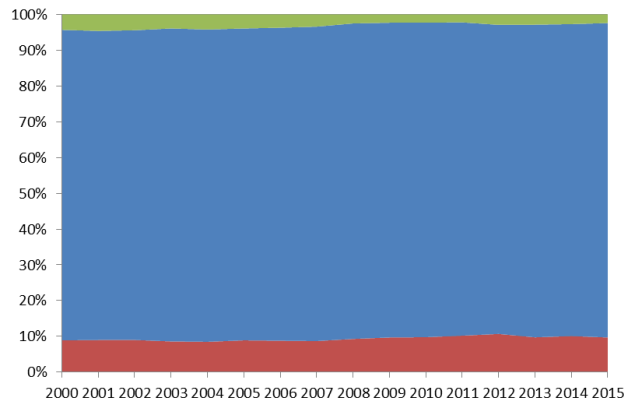
Asia and Oceania



North America



CIS countries



■ Road ■ Rail ■ Inland waterways



## Environmental impacts of transport [1]

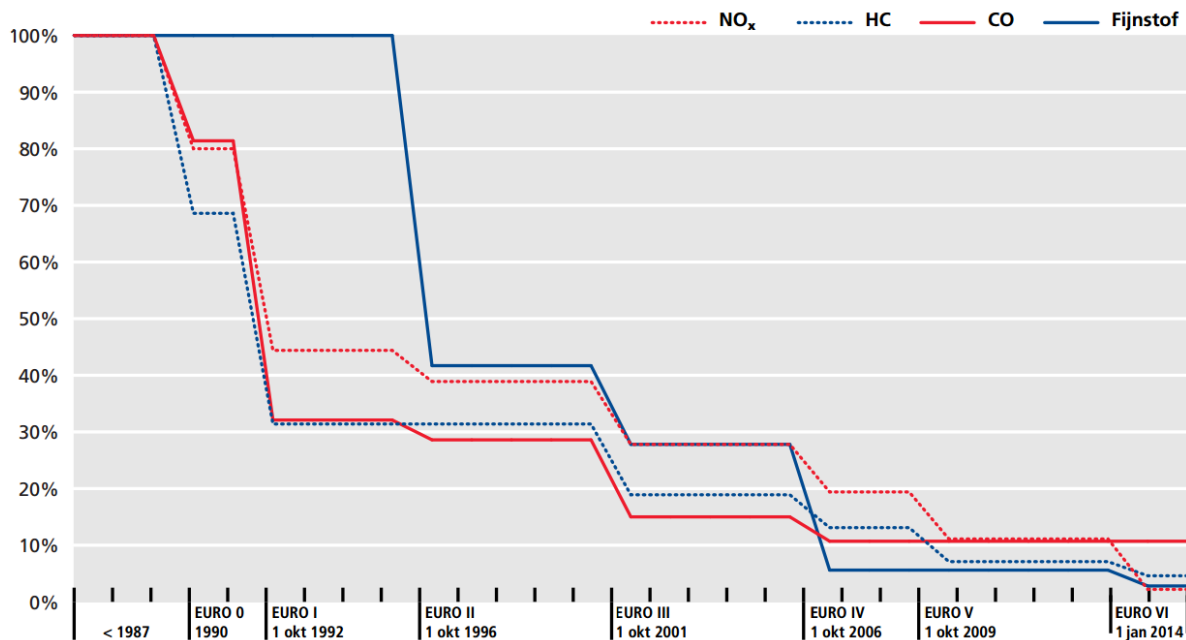
- Problems:
  - global warming
  - pollution
- On global warming: UNFCCC Conference of the Parties, Paris, December 2015 (COP21): parties publically communicated their climate commitments



## Environmental impacts of transport [2]

- On pollution:

### Euro-standards on emissions reduction of lorries compared to EURO0 (1990-2014)



Further technological progress - technologically difficult, in the foreseeable future EURO VII emission class is not expected.

# Future emerging technologies

## Electrification



## Automation



## Power supply from the infrastructure





## Solution available today » High Capacity Vehicles

### Definition

Bigger than conventional road freight vehicles.

**The distinguishing characteristic:** they are able to transport a larger weight or/and volume of cargo in one trip than a normal vehicle would.

### Weight and volume limited cargo

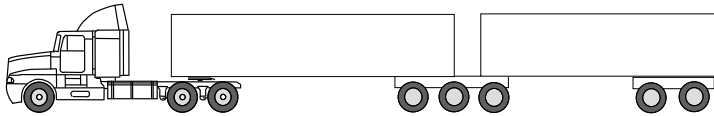


## Example: weight limited cargo

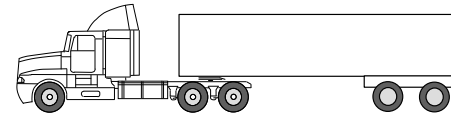


# Near-term approach » High Capacity Vehicles

## North America fuel and CO<sub>2</sub> emission comparison



Canadian B-train



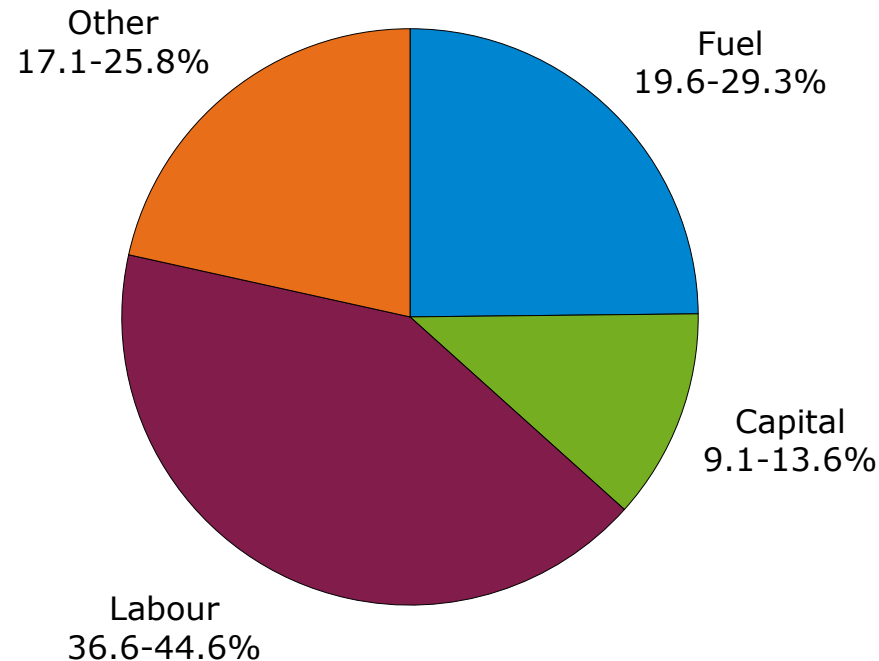
US Tractor semitrailer

Country & Vehicle	Cargo unit Fuel (liter/tkm)	Cargo unit CO <sub>2</sub> (g CO <sub>2</sub> /tkm)	Fuel and GHG Advantage per unit cargo
Canada B-Train	0.037	98.79	68%
US Tractor semi	0.063	165.9	-



# High Capacity Vehicles: Why? Economics

Road haulier cost structure in European countries, min-max in %



Data source: Panteia (2018) for Austria, Belgium, Denmark, France, Germany, Great Britain, Italy, the Netherlands, Norway, Spain and Sweden.



## **High Capacity Vehicles: Why? Safety [1]**

- Vision Zero and other road safety initiatives – high on political agenda
- Safety of HCVs – major concern due to their increased size and weight (main argument by the opponents)
- reported accident rates in all countries are lower for HCVs



## High Capacity Vehicles: Why? Safety [2]

Reasons for better safety performance:

- often equipped with additional safety systems
- higher compliance rates with the existing regulations
  - safer everyday operation (thanks to ITS enforcement)
- companies assign their best drivers
- limited to specific geographical areas or specific limited routes → not comparable with conventional
- higher efficiency of HCVs: same amount of transportation can be performed with a lower number of vehicle kilometres



## Trends in HCV adoption

- Evidence-based approach to policy making is currently eclipsed by emotional arguments – against increasing the weight and dimensions
- More stringent regulatory approaches have been an enabler in different local situations
- Regulators may choose:
  - to limit the road network that the vehicles can use,
  - hauliers may be put under specific requirements,
  - vehicle performance characteristics may be subject to additional requirements,
  - driver qualifications and actions can be prescribed, and
  - specific operational conditions of the vehicles can be limited.



## Example: IAP, BevChain

### Intelligent Access Program (IAP), Australia:

- national program
- uses satellite tracking and wireless communication technology
- remotely monitor where, when, and how heavy vehicles are being operated on the road network.



**BevChain Logistics** specializes in the transport and warehousing of beer from the Castlemaine Brewery at Milton in Brisbane to its warehouse in Hendra (another suburb in the North East of Brisbane).

Under the framework of IAP:

- specially designed quad axle semitrailer combination
- 11km stretch of local road
- overall increase of **14.6% tonnage gain** per load = additional **four pallets** for each trip
- win-win scenario: commercial and government objectives



## Regulatory accommodation

- Regulatory accommodation is crucial
- Policymakers are the drivers for policy change, (e.g. the minister of transport, to contribute to achieving their transport policy goals)
- Change is often hard and public support for such actions is crucial
- Helps:
  - support from the industry and society
  - opinion leader/influencer – important
  - stringent enforcement (e.g. ITS systems): reliably ensure following the rules
  - geographical limitations to specific areas/roads.
- Hinders:
  - lobby of competing modes of transport

# Thank you!

**Dr Raimonds Aronietis**

Policy Analyst

**International Transport Forum**

2 rue Andre Pascal  
75775 Paris Cedex 16