

# The Environmental Challenges of Road Research

Greener, safer  
and smarter  
road transport  
for Europe



Transport Research Arena | Europe 2006  
Göteborg, Sweden, June 12th - 15th 2006

**TRA**

Claude Van Rooten

Director general BRRC

Vice-president FEHRL

## Introduction

- Road transport is, and will remain, the dominant mode of transport for goods and people in Europe for the foreseeable future.
- However, the influence of road transport on society and the environment is not totally beneficial.



## Challenges

- Therefore considerable work is needed to achieve a situation where road transport can meet societal needs without undue negative impact.
- Such developments require careful consideration and the identification of the research needs to achieve a vision for a sustainable European road network is imperative

## FEHRL Background

- 15 years as the European Centre of Excellence in Road Research
- Formed as the organisation of European National Road Research Centres
- Currently consists of 29 institutes - all with a public service orientation - employing over 5,000 staff
- Facilitates cooperative research projects for European Road Directorates, European Commission and other clients

# Transport Research Arena | Europe 2006

Göteborg, Sweden, June 12th - 15th 2006



		arsenal			KEDE			IBDIM
		BRRRC			KTI			LNEC
		CRBL			PRA			CESTRIN
		IGH			NRA			IP
		CDV			ANAS			VUD
		DRI			VAS			ZAG
		TECER			TKTI			CEDEX
		LCPC			INRR			VTI
		LCPC			DWW			EPFL
		BAST			NPRA			TRL

5 Members of FEHRL are close to those of CEDR

## FEHRL & European Technology Platforms

FEHRL was a founder member of both TPs that are influencing the major parts of the EC's 7<sup>th</sup> Framework programme of relevance to CEDR:



the European Road Transport Research Advisory Council's executive body - the 'Work Group' - comprises EUCAR, CLEPA, EARPA, CONCAWE & **FEHRL**

the European Construction Technology Platform was developed with FEHRL's help through ECCREDI. FEHRL co-leader of Networks Area (infrastructure for all transport modes and utilities)

Operating at the content level, both platforms have brought FEHRL closer links with industry

## Why is there a FEHRL perspective?

- Traditionally, our interaction with the automotive sector has been limited to specific 'narrow' issues (e.g. road damage).
- As solutions providers for Road Infrastructure, we are not seeking to arrogantly propose our views 'outside our field'.
- We are seeking to establish productive cooperation on aspects of our work where a 'systems' approach is increasingly needed.

## What others said about such cooperation

- ERTRAC “The solutions required by, and for, our society can only be achieved through a cross-functional, systems approach to research activities and the subsequent development and implementation by both the private and public sectors.”
- EC (FP7) ‘new “transport systems” perspective that considers the interactions of vehicles, transport networks and the use of transport services, which can only be developed at European level.

## Developing a mutual understanding

*'low-noise surfaces already exist, so why can't they be laid everywhere?'*

is equivalent to saying

*'hybrid vehicles already exist, so why can't all vehicles be hybrid?'*

Our common problem is the research to better implement the technologies where they are appropriate

## The shared challenge

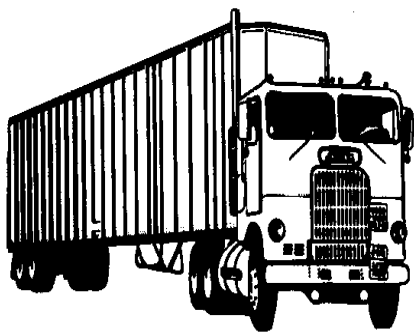
It is not in the interest of society or industry if:

- the lack of availability of road space
- or the cost (direct or indirect) of using roads

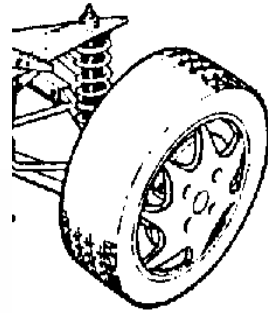
becomes so high that people can't afford the mobility offered by road vehicles or the goods transported on roads.

## The classic timeline for legislation!

Considering issues such as noise, safety, emissions, CO<sub>2</sub> etc

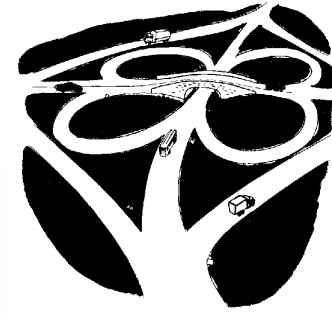


Vehicle



Component

(e.g. tyre)



Road

The solutions are often sub-optimal because of the independent approaches. Future developments need a more integrated approach (c.f. CARS 21, ERTRAC)

## So what do we want.....

- FEHRL's priorities are our bosses priorities. Our bosses are the road authorities - acting both separately and collectively.
- The development of our own research programme considers both their current needs and anticipates their future needs.
- Collectively the road authorities act through the Conference of European Directors of Roads - CEDR

## FEHRL's future programme

- The Strategic European Road Research Programme (SERRP IV) will be published in early 2006 and sets out our research programme for 2006-2011
- It considers four themes.
  - Mobility, Transport & Infrastructure
  - Energy, Environment & Resources
  - Safety & Security
  - Design & Production
- The programme combines internal projects, collaborative projects with industry, individual national projects and EC projects.

## Energy, Environment & Resources

- Environmental issues continue to occupy a high profile on the political agenda throughout Europe.
- Road transport contributes to these concerns, particularly from the point of view of traffic noise, air and water pollution, and recycling



## Priorities

Energy consumption

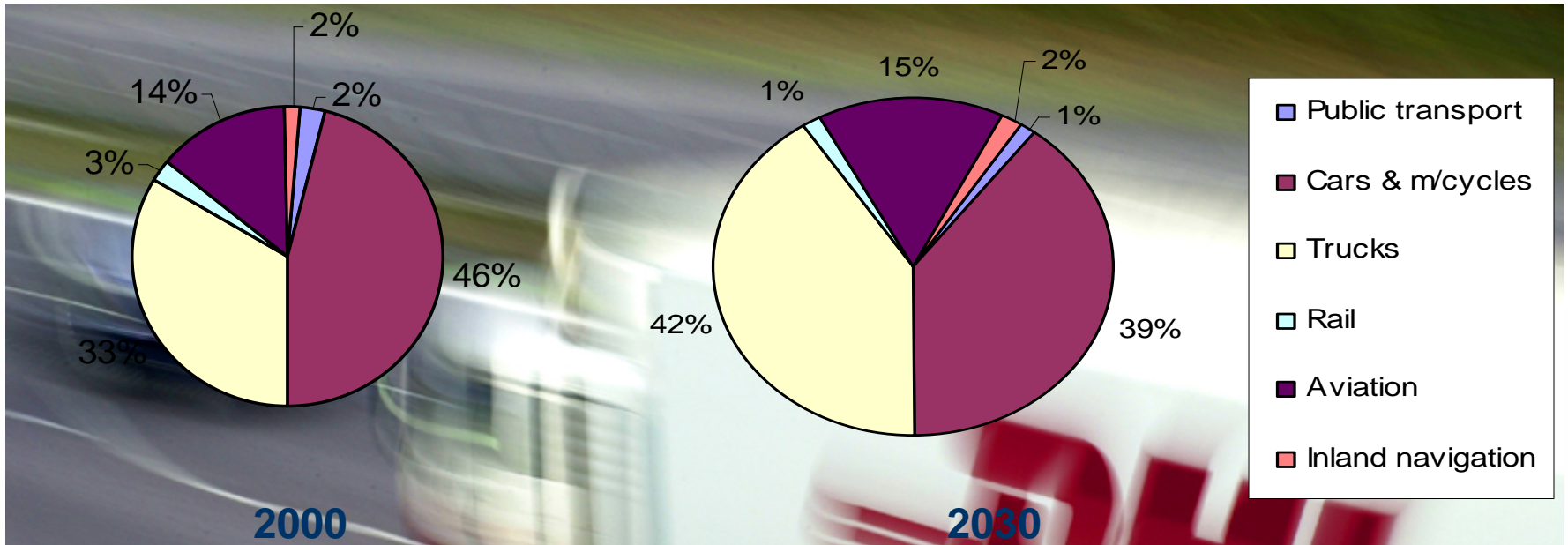
Pollution and Environmental Control

Nuisance and societal/cultural impacts

Sustainable construction



# Energy consumption & CO<sub>2</sub>



**Trucks grow from second largest polluter in the transport sector in 2000 (EU-30) to the largest in 2030**

**Responsibility for air pollution and noise is passing to Road operators, it is reasonable to expect the same for CO<sub>2</sub>.**

Source: DG TREN

## Road influence on truck fuel consumption

- Reducing tyre/road rolling losses including reducing rough road surfaces (within safety limits, 11%), reducing the unevenness of roads (7%).
- Supporting the operation of larger trucks would enable fuel consumption to be reduced (15-20%)
- Considering the influence of rain and snow on the road surface (10-20%)
- A more flexible road can increase fuel consumption by 10-20%
- Taking into account the aerodynamic environment (road side features, road layout and traffic management)

## Other examples

- Research will also be carried out to develop pavements that combine the mitigation of non-exhaust emissions, noise and other adverse factors
- Innovative infrastructure design for lower emissions and reduced impacts including road-side features such as combined noise/wind barriers and improved features to reduce habitat and community severance effects.

## Other examples

Research will further consider methods for substantial reduction of the use of primary materials in road construction and maintenance. This research will consider the benefits to come from, reducing mineral extraction and transport, as well as providing paths for the use of waste materials from other sources. The research will develop new treatment methods and to understand the influence on performance. Specific elements of the research activity will include:

- The use of industrial by-products in the use of cementitious structures.
- The use of asphalt and composite materials
- Development of improved in-situ recycling processes.

## Delivering a joined-up approach

- Structurally - and politically - infrastructure research (and especially implementation) is not the same as industrial research.
- To be successful, we need to involve a greater number of countries in our research in order to avoid the 'not invented here' and the 'it cannot work here' syndrome.
- At a national level, partnerships with industry have traditionally been successful. But we have not yet scaled this up to the European level.

## Summary

A collaborative approach will be needed for:

- Optimising capacity of the network and increasing the efficiency of goods transport
- Preventative and mitigating Road Engineering for safety
- Reducing energy consumption, environmental impact and nuisance and societal/cultural impacts
- Implementation of innovation
- Development of better - integrated - standards & Directives