

ROSANNE Final seminar, Sterrebeek

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Measurement methods for rolling resistance properties of road surfaces

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Why having a focus on Rolling Resistance



Road infrastructure and Traffic

Monitoring service levels



Strategic Maintenance



Length of Road in Europe



- EU28 km of roads

Motorways	Main or National Roads	Secondary or regional roads	Other Roads	Total
71,405 km	285,849 km	1,548,618 km	3,619,296 km	5,524,983 km

Source: European Union Road Federation yearbook 2014 - 2015



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Road transport activities in Europe

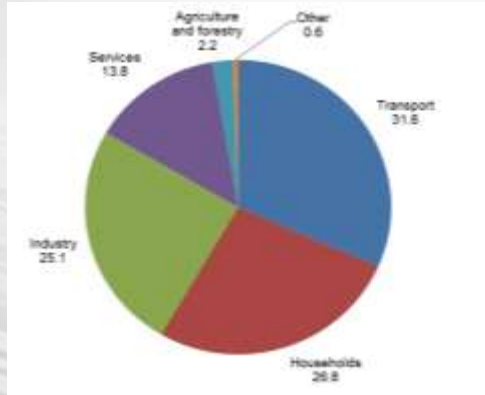


- ▶ In 2013 total goods transport activities in the EU-28 are estimated to amount to 3481 billion tonne km.
- ▶ Road transport accounted for 49.4% of this total, 1737 billion tonne km. EU-28 average vehicle loads were 13.8 tonnes in 2014 \approx 125 billion km
- ▶ In 2013, total passenger transport activities in the EU-28 by any motorised transport are estimated to 6465 billion person km.
- ▶ Passenger cars accounted for 72.3% of this total, 4674 billion km Average occupancy rate pr. vehicle is app. 1,7 \approx 2750 billion km

Source: Transport in figures – statistical pocketbook 2015



Energy consumption by sector



Energy consumption in EU
(% of total, based on tonne of oil equivalent, toe)

	(thousand toe)
Transport	348.548
Households	295.877
Industry	276.638
Services	152.541
Agriculture	23.898
Other	6.312

Source: Eurostat (online data code:nrg_100a)



The scenario seen from a Danish point of view

- ▶ The total fuel consumption on the Danish state roads reaches 1692 million litre per year.
- ▶ The total travelled distance on the state roads are:
 - Passenger cars and light trucks: 20,22 billion km
 - ▶ Trucks: 1,63 billion km.
- ▶ Emissions:
- ▶ Passenger cars, an average life 9 years; 165 g/km
 - ▶ Trucks; 850 g/km

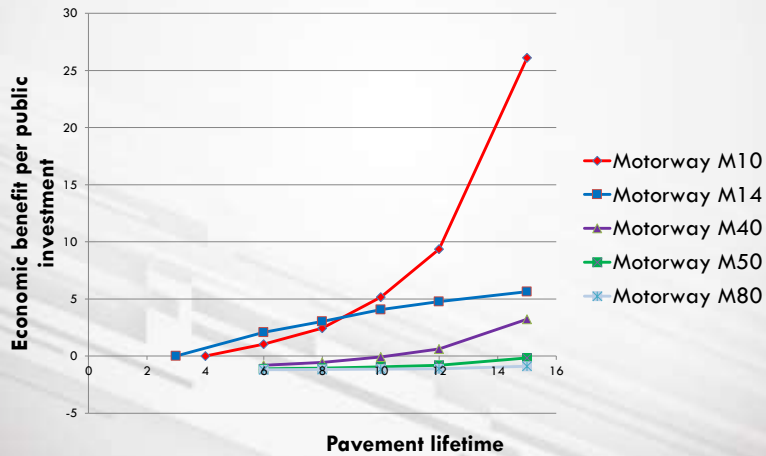


Total CO2 emission from the traffic on the state roads is then:

4,6 million ton per year



The socio economic aspects and break even for the investment



The value of well maintained road network

Average state road condition in 2012:

Mean value of MPD: 1.08

Mean value of IRI: 1.27

Increased investments by a factor 3-4 over a 3 year period maintaining 1/4 of the state roads to clear state roads backlog

Average state road condition in 2015:

Mean value of MPD: 0.876

Mean value of IRI: 1.1

Percentage reduction in fuel consumption:

Car: 0.653%

Truck: 1.02%



In order to secure correct implementation of Rolling Resistance measurements on road infrastructure and Fuel consumption models in Asset Management

- A standard for measuring rolling resistance in Europe is highly needed



Rosanne workpackage 3
Measurement methods for rolling resistance properties of road surfaces

Objective:

- To prepare for International and European standardization of measurement methods for representative and accurate characterization of road surface rolling resistance properties.
- The trailer method shall be further improved in order to qualify as a standard method.
- To analyse and compare the properties of available test equipment for rolling resistance.
- To provide a draft for standardization of a procedure for harmonized rolling resistance classification of road surfaces across Europe.



The work performed

Task 1: Rolling resistance measurement method; BRRC

Task 2: Parameters influencing rolling resistance measurements;
TUG

Task 3: Comparison of alternative test methods and relation to full
vehicle energy consumption; VTI

Task 4: Robust calibration methods for trailers; TUG

Task 5: Validation test programme for the rolling resistance
measurement method; IFSTAR