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Green Procurement in Europe

Vehicles

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Introduction

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Introduction

Main challenges

- Climate Protection
  - Road traffic causes 20 % of the CO_2 emissions in the EU
- Pollutant emissions
  - Traffic in cities causes up to 50 % of particulate matter emission
  - European Air Quality Framework
- Noise

Advantages of green procurement

- Protection of environment and climate
- Less dependency on fuel prices
- Protection against driving restrictions in inner-city air pollution control areas
- An environmentally-friendly company image
- Economic efficiency

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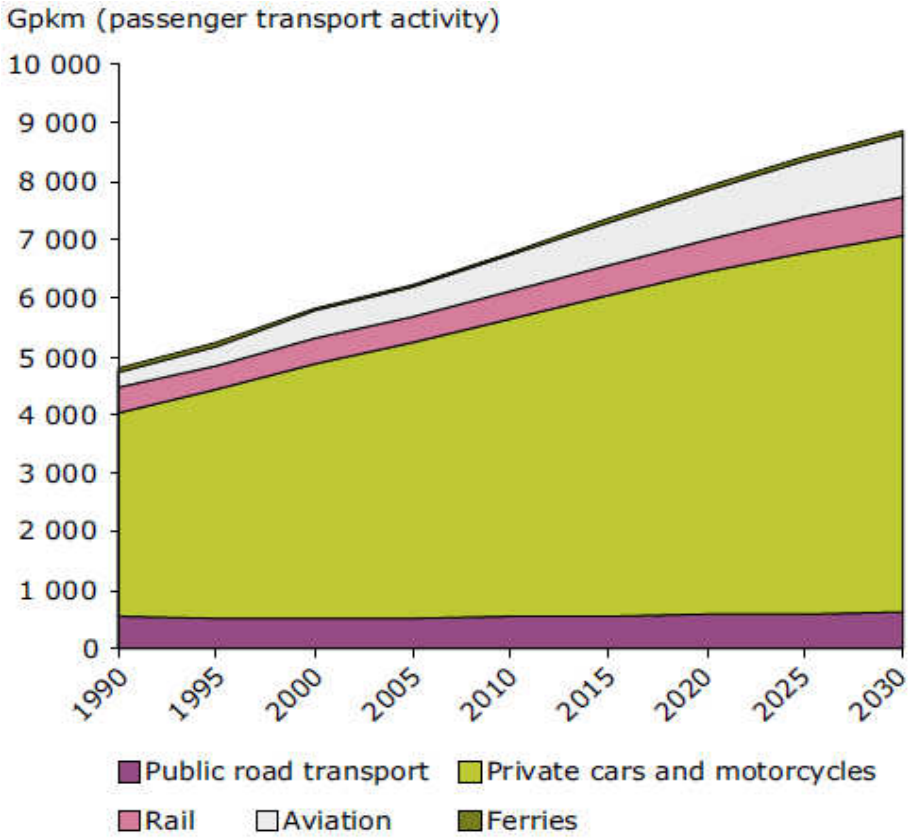
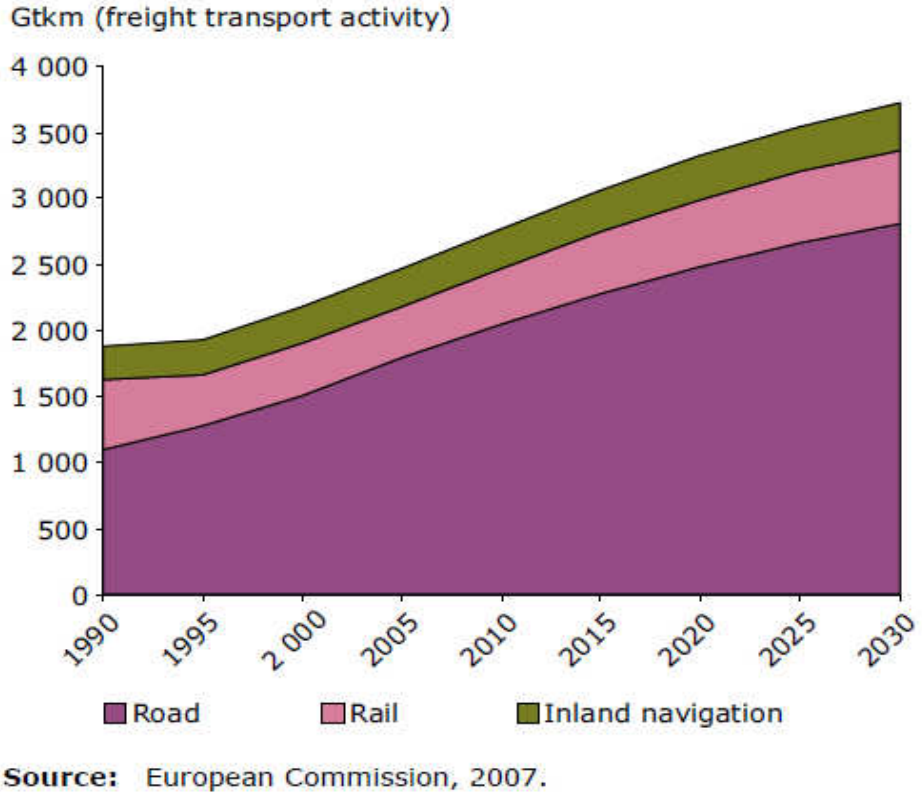
Outlook

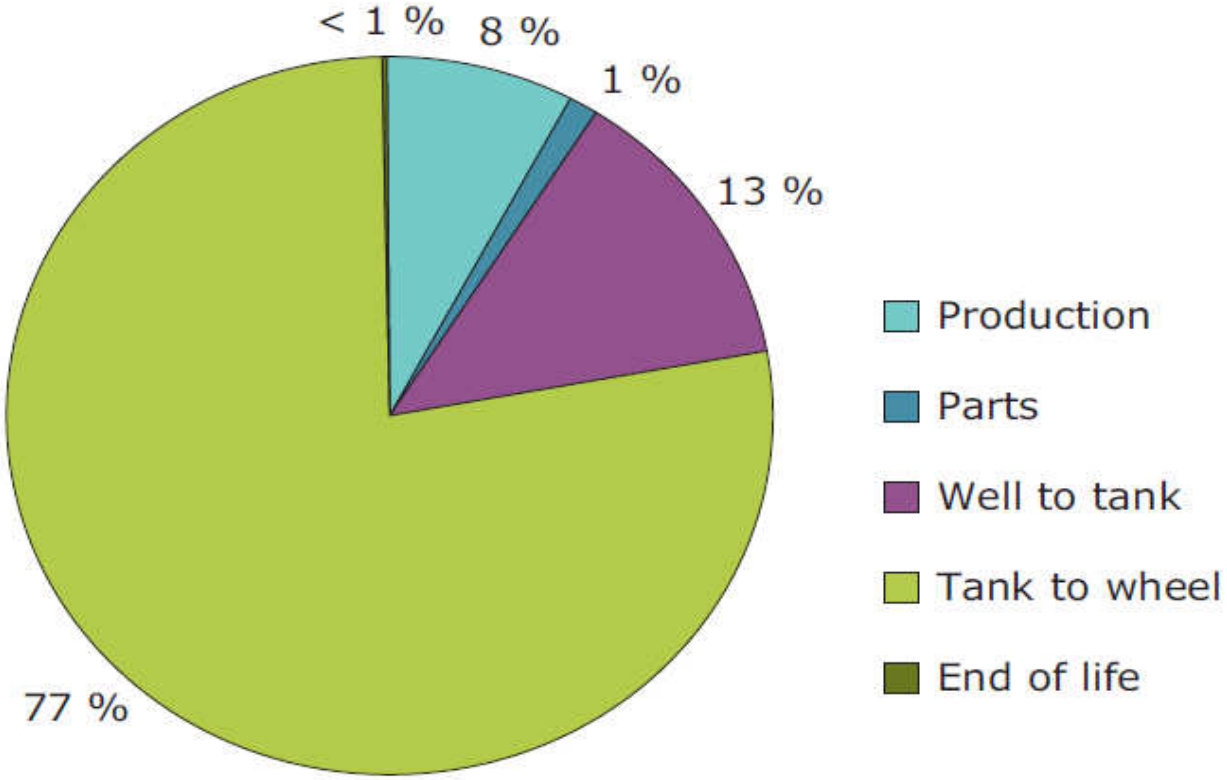




Source: European Commission, 2007.

Quelle: EEA Report No 2/2010

Life cycle CO_2 emissions



Source: IMPRO-car, 2008.

EEA: Term 2009

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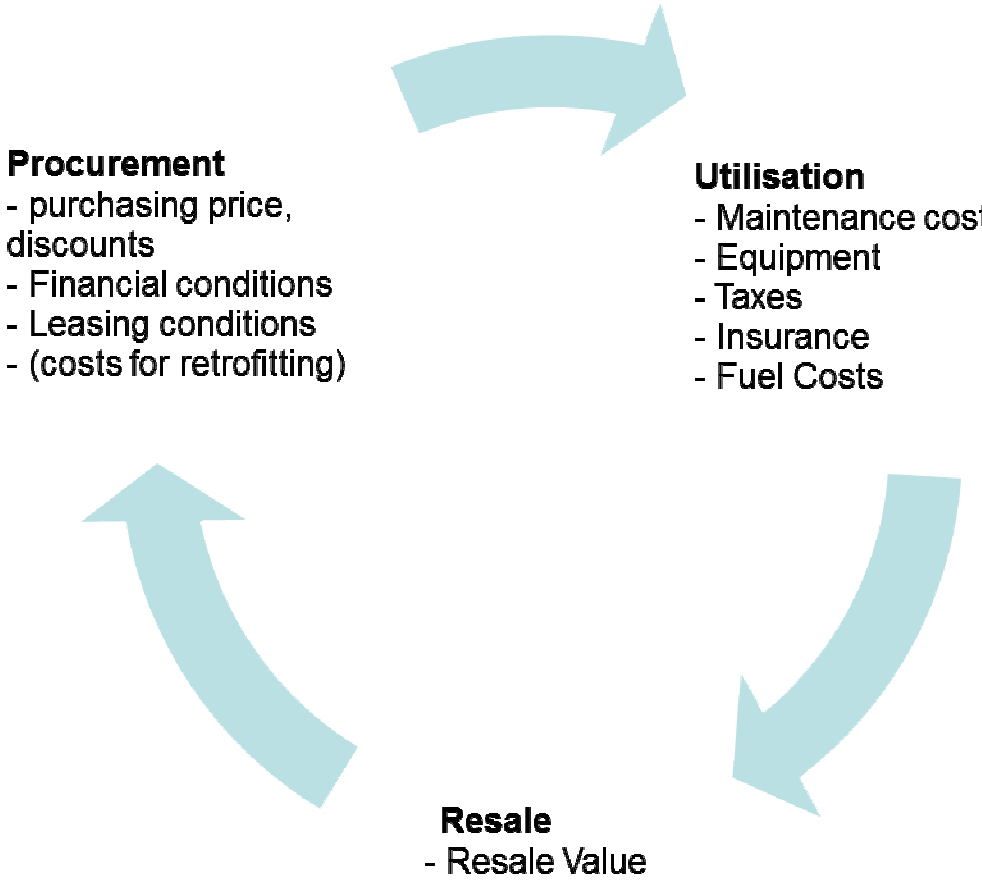
Life cycle costs



Fuel prices have a share of up to 50 % of the life cycle costs, depending on the amount of driving.

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Technologies

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Conventional Vehicles

Gasoline

+ low particle and NOx-emissions

- consumption/CO_2-emissions higher than for comparable diesel vehicles

- ban on driving for old vehicles without controlled catalytic converter in environmental zones

Picture: H. Huppertz

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Conventional Vehicles

Diesel

+	consumption/CO_2-emissions lower than for comparable gasoline vehicles
+ / -	with particle filter low particle emissions
-	higher NOx-emissions than gasoline vehicles
-	ban on driving for strong emitting vehicles in environmental zones

Picture: H.-G. Oed

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Natural Gas Vehicles

+	no particle emissions
+	lower NOx-emissions compared to diesel vehicles
+ / -	CO_2-emission savings compared to diesel vehicles are low
+ / -	fuelling stations infrastructure differs regionally
-	limited offer of new vehicles

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Liquid Gas Vehicles

+	no particle emissions
+	lower NOx-emissions compared to diesel vehicles
+ / -	CO_2-advantage compared to diesel vehicles is minimal
+ / -	fuelling stations infrastructure differs regionally
-	limited offer of new vehicles

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Hybrid Vehicles

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+ high saving potential for fuel consumption in city traffic

+ CO_2-advantage up to 30 % compared to conventional vehicles

- low saving potential for interurban driving

- limited offer of new vehicles

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Electric vehicles

+ no tail-pipe emissions

+ No noise

+ lower operational/fuel costs (by 80 % compared to gasoline cars)

- Longer time to recharge and limited offer of new vehicles

- Still limited driving range before needing to be recharged

- Not „green“, if the source of electricity mainly from fossil fuels

- Short battery life (especially in cold temperature)

Source: www.hybridcars.com

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Bio/Agrofuels

+ Advantage in climate protection compared to fossil fuels (even though not necessarily)

- No advantages regarding pollutant emissions

- Use of pure „biofuels“ is limited, just in few vehicles possible

Bild: AboutPixel.de

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Future Technologies

- Second Generation Biofuels
- Hydrogen Vehicles

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Label

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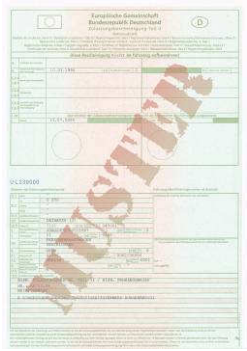
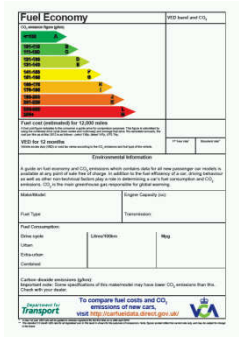
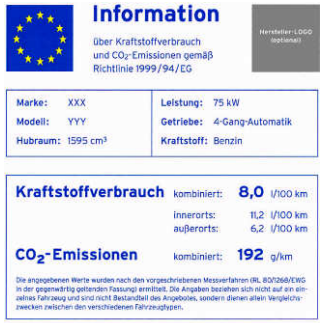
Labels

- Exhaust Emission Standards for Motor Vehicles (European Standard)



- European Fuel Economy Label

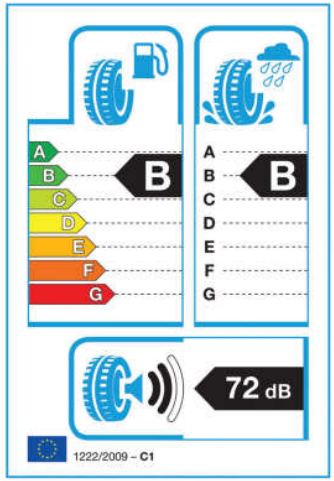




- The Blue Angel

Grading of tyres

- Tyres are responsible for **20 to 30 %** of vehicles' **fuel consumption**
- energy labelling of tyres from November 2012
  - Regulations 1222/2009/EC and 1235/2011/EU
  - Tyres typically mounted on passenger vehicles and light and heavy-weight commercial vehicles
- Information on **tyres' rolling resistance** (fuel efficiency), **wet grip performance** and external **rolling noise**
- Difference between energy efficiency class E and A of the fuel efficiency is almost 40 %



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Criteria

Purchasing guidelines and criteria

Directive 2009/33/EC on the **Promotion of Clean and Energy Efficient Road Transport Vehicles**

- The **operational energy and environmental impacts** to be taken into account shall include at least the following:
  - energy consumption;
  - emissions of CO_2; and
  - emissions of NO_x, NMHC and particulate matter.
- If the impacts are monetised for inclusion in the purchasing decision, common rules shall be followed for calculating the lifetime costs linked to the operation of vehicles.
- More information at www.cleanvehicle.eu

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Calculation of lifetime costs

- According to the Directive 2009/33/EC
  - Operational lifetime costs of energy consumption (fuel consumption x fuel cost x lifetime mileage)
  - The operational lifetime cost for the CO2 emissions and cost for the pollutant emissions (lifetime mileage x emissions in g/km x cost per gram

Calculation of operational costs according to the Directive 2009/33/EC

Parameters of passenger cars with diesel motor in EURO 5 standard						*Prices*	
Fuel	l/100 km	4,8	5,2	5,6	5,9	1,6	EUR/l
CO2	g/km	130	140	150	160	0,03	EUR/kg
NOx	g/km	0,18	0,18	0,18	0,18	0,0044	EUR/g
NMHC	g/km	0	0	0	0	0,001	EUR/g
PM	g/km	0,005	0,005	0,005	0,005	0,087	EUR/g
Lifetime mileage	ths. km	200	200	200	200		
Costs of fuel	EUR	15 360	16 640	17 920	18 880		
Costs of CO_2 emissions	EUR	780	840	900	960		
Costs of other emissions	EUR	245	245	245	245		
Total costs	**EUR**	**16 385**	**17 725**	**19 065**	**20 085**		

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The EU GPP Criteria for Transport

- Published in 2012
- Criteria for **passenger cars**
  - The core criteria are based on CO_2 and other emission limits
  - Comprehensive criteria further include requirements on e.g. monitoring systems and displays for tyre pressure, fuel consumption or gear shift indicators, vehicle tyres noise and rolling resistance.
- Criteria for **public transport vehicles** and **waste collection trucks**
  - To meet standards of „enhanced environmentally friendly vehicle “
  - comprehensive criteria require compliance with the EURO VI standard for emissions, location of exhaust pipe (on other side than passenger door), use of low viscosity engine lubricant oils with biodegradable substances, or maximum rolling resistance and tyre label
- Additional points to be awarded for use of alternative fuels
- Available at: http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

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Tipps

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Practical tips for procurement

- **Is the vehicle needed?**
  - Consider car sharing, car pooling and public transport before launching in the purchase
- Find out about **fuel efficiency and environmental aspects**
  - Use the calculation defined in Clean Vehicle Directive (2009/33/EC)
- **Which fuel**?
  - Classic fuel vehicles (petrol and diesel), natural gas motors, hybrid cars and electric cars
- Consider **pollutant emissions** (look at EURO numbers)
  - From 2011, all new cars have to meet Euro 5 standards (introduction of particle filters for diesel cars obligatory).
  - From September 2015, new cars will have to meet Euro 6. However, some cars meet Euro 6 standards already now and therefore look for these cars in your purchases.
  - For trucks, analogous standards (EURO VI) are in place

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Tips for use phase

- Tyre pressure and quality
- Low Viscosity Oil (High lubricity Oil)
- Regular service for vehicles
- Eco-driving
  - Drive smoothly and anticipate the traffic flow
  - Shift up early
  - Do not waste fuel
  - Do not overuse air conditioning

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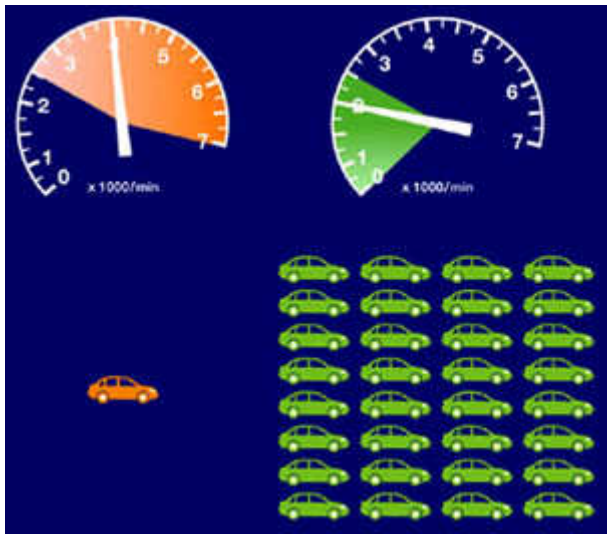
Benefits of Eco-driving

- **Fuel Consumption** and **Climate Protection**
  - eco-driving trainings can reduce fuel consumption by 20% directly after training and by about 5% in the long run. However, it could be up to 12 % in inner-city traffic
- **Local Environment** and **Health**
  - One vehicle at 4000 rpm produces the same amount of noise as 32 vehicles travelling at the same speed with only 2000 rpm
- **Costs** and **Safety**
  - Eco driving can decrease the accidents and related costs by 25 – 30 %



Source: www.ecodrive.org

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Good practice example - Berliner Verkehrsbetriebe (BVG)

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BVG Berliner Verkehrsbetriebe

Since 1999 the BVG is reducing the emissions of their busses by installing modern particulate filters.

- the catalyser and the downstream self-cleaning filter capture average of 96 % of the sooty particle.
- The buses equipped with the CRT-system emit less than the exhaust emission standard EURO 5 from 2008.
- The busses also fulfil the standards of the EEV (Enhanced Environmentally friendly Vehicle).

From 1998 to 2004

- the emissions of CO decreased from 14 237 to 1 478 g/kWh (90 %)
- the emission of hydrocarbons from 3 419 to 58 g/kWh for the whole fleet (98 %)

More good practice examples at http://www.buy-smart.info/good-practice-examples/vehicles2/vehicles4

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Further information

- EU: GPP Toolkit
  http://ec.europa.eu/environment/gpp/first_set_en.htm
- Ecolabel
  http://ec.europa.eu/environment/ecolabel/index_en.htm
- Blue Angel
  www.blauer-engel.de/
- Buy Smart
  www.buy-smart.info
- Clean Vehicles portal
  www.cleanvehicle.eu
- EC Transport & Environment,
  http://ec.europa.eu/environment/air/transport/road.htm
- EcoWill
  www.Ecodrive.org

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