



# EU Policy on Clean Vehicles

- **Measures in support of clean vehicles**
- **Clean Vehicle Directive**
- **Monetisation of lifetime costs**

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# Measures in Support of Clean Vehicles

## Supply side measures

- **Regulation of pollutant emissions**  
Reduction of pollutant emissions through EURO standards
- **Regulation on CO<sub>2</sub> emissions from cars**  
130 g/km phased in 2012-2015; 95 g/km by 2020
- **Renewable Energy Directive**  
10% share of motor fuels from renewable energy sources by 2020
- **Fuel Quality Directive**  
6% reduction of CO<sub>2</sub> intensity of fuels by 2020

## Demand side measures

- **Greening Transport**  
Internalisation of external costs into vehicle operation
- **Clean Vehicle Directive**  
Promotion of clean and energy efficient vehicles in public procurement



# Clean Vehicle Directive

- **Aim**

Market introduction of clean and energy efficient vehicles to improve the environmental performance of transport

- **Scope**

Road transport vehicles purchased by contracting authorities and entities, and operators under public service obligation for passenger transport

- **Approach**

Inclusion of life-time impacts in vehicle purchase on energy consumption, CO<sub>2</sub>, pollutant emissions



# Role of Public Procurement

- Public authorities should ensure that the **EU policy objectives** on energy efficiency, greenhouse gas emission reduction and air quality improvement are met.
- Public procurement is a **key market of high visibility** and a lead market for the introduction of new technologies.
- Public procurement will **stimulate business and private customers** to adopt the same approach.
- Common rules are required to **avoid market distortions** and are crucial for a rapid and broad market introduction of vehicles with better environmental performance.



# Purchase of Clean and Energy Efficient Vehicles

- **Lifetime impacts** have to be taken into account on
  - Energy consumption
  - CO<sub>2</sub> emissions
  - Pollutant emissions, including NO<sub>x</sub>, NMHC, PM
- **Options**
  - Technical specifications for energy and environmental performance
  - Energy and environmental impacts as award criteria
- **Monetisation of impacts** with harmonised methodology



# Monetisation of Lifetime Impacts

## *Internalisation of external costs*

### Energy

Basis: Market price without tax

→ the cheaper of petrol or diesel

### Pollutants

Basis: Handbook of external costs in transport

→ NO<sub>x</sub>: 0.44 €/g; NMHC: 0.1 €/g; PM: 8.7 €/g

or up to factor 2 higher

### CO<sub>2</sub>

Basis: Market price in European emission trading

→ 30-40 €/t



# Monetisation of Emissions

## Cost for emissions in road transport

<b>CO<sub>2</sub></b>	<b>NO<sub>2</sub></b>	<b>NMHC</b>	<b>Particulate matter</b>
<b>0,03-0,04 €/kg</b>	<b>0,0044 €/g</b>	<b>0,001 €/g</b>	<b>0,087 €/g</b>



# Vehicle Price and Operational Lifetime Costs

Examples for vehicles with emission standards EURO IV (bus), EURO 4 (car)

Vehicle type		Bus (lifetime 800.000 km)		Diesel Car (lifetime 200.000 km)		Petrol Car (lifetime 200.000 km)	
<b>Vehicle price</b>		<b>150.000 €</b>	<b>100%</b>	<b>17.000 €</b>	<b>100%</b>	<b>15.000 €</b>	<b>100%</b>
Lifetime costs	Fuel	282.150 €	188%	6.188 €	36%	7.700 €	51%
	CO <sub>2</sub>	24.168 €	16%	530 €	3%	669 €	4,5%
	NOx	70.224 €	47%	220 €	1%	70 €	0,5%
	NMHC	2.098 €	1%	10 €	0,1%	20 €	0,1%
	Particulate matter	7.934 €	5%	435 €	3%	87 €	1%
<b>Vehicle price + lifetime costs</b>		<b>536.574 €</b>	<b>358%</b>	<b>24.383 €</b>	<b>143%</b>	<b>23.547 €</b>	<b>157%</b>



# Lifetime Emission Costs for Buses of different Euro Classes

	Bus	Lifetime 800.000 km			
		Fuel consumption 57 l / 100 km			
	Euro I	Euro II	Euro III	Euro IV	Euro V
CO <sub>2</sub>	24.168 €	24.168 €	24.168 €	24.168 €	24.168 €
NO <sub>x</sub>	160.512 €	140.448 €	100.320 €	70.224 €	40.128 €
NMHC	5.016 €	5.016 €	3.010 €	2.098 €	2.098 €
PM	142.819 €	59.508 €	39.672 €	7.934 €	7.934 €
<b>Total</b>	<b>332.515 €</b>	<b>229.140 €</b>	<b>167.170 €</b>	<b>104.424 €</b>	<b>74.328 €</b>



# Lifetime Emission Costs for Cars of different EURO Classes

	<b>Diesel car</b>	Lifetime 200.000 km			
		Consumption 5 l / km			
	<b>Euro 1</b>	<b>Euro 2</b>	<b>Euro 3</b>	<b>Euro 4</b>	<b>Euro 5</b>
<b>CO<sub>2</sub></b>	530 €	530 €	530 €	530 €	530 €
<b>NOx</b>	6.341 €	6.341 €	440 €	220 €	158 €
<b>NMHC</b>	174 €	140 €	12 €	10 €	10 €
<b>PM</b>	2.436 €	1.392 €	870 €	435 €	87 €
<b>Total</b>	9.481 €	8.403 €	1.852 €	1.195 €	785 €



# Support for Innovation with Lifetime Costing

## *Competitive advantage for clean technology*

### **Lower pollution emission**

→ Euro V bus ~100.000 € cheaper than Euro III bus:

New vehicle cheaper than second hand vehicle

→ CNG bus at 0 pm emissions ~8.000 € cheaper than Euro V diesel bus: compensates for total cost of pm filter on diesel bus

### **Lower energy consumption**

→ Electric car ~5.000 € cheaper than petrol car:

compensates for ~ 50% of additional cost of the battery



# Cost-Benefit Analysis

## Economic gain

- **Net gain** from the saving in energy consumption
- **Lower overall cost** with procurement decisions on the basis of lifetime cost

## Lower cost for the citizen

- **Decrease in the cost of public transport** can result
- **Decrease in the cost of health care and climate change**



# Commission Support to Implementation

## Internet based online information:

- **Legislative Guide** to associated EU legislation
- **Lifetime cost calculator**
- **Procurement decision tool**: STARBUS project
- **Joint procurement guide**: COMPRO, PROCURA projects
- **Clean and energy efficient vehicles**: references + links

**Launch: 30 March 2009 (Directive adopted by Council)**



# Summary

## **Policies and measures in support of clean vehicles**

### **Supply side**

- **Pollutant and CO<sub>2</sub> emission standards**
- **Renewable fuel target**
- **CO<sub>2</sub> intensity cap on fuels**

### **Demand side**

- **Charging with environmental component**
- **Promotion of clean vehicle procurement**

## **Leading role of public procurement**

- **Acceleration of market introduction of clean vehicles**
- **Steering role for business and private investment**



# Contact

**Website Clean Transport and Urban Transport:**

[http://ec.europa.eu/transport/urban/index\\_en.htm](http://ec.europa.eu/transport/urban/index_en.htm)

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