



SAE Fuels & Lubricants Meeting – June 2004 - Toulouse



European Commission - DG Environment

Overview & Impact of Current & Emerging Legislation for Automotive Fuels in the Near Future

Policy Overview

Peter Gammeltoft

European Commission

DG Environment

Unit C1 “Clean Air & Transport”



Driving forces

European Commission - DG Environment

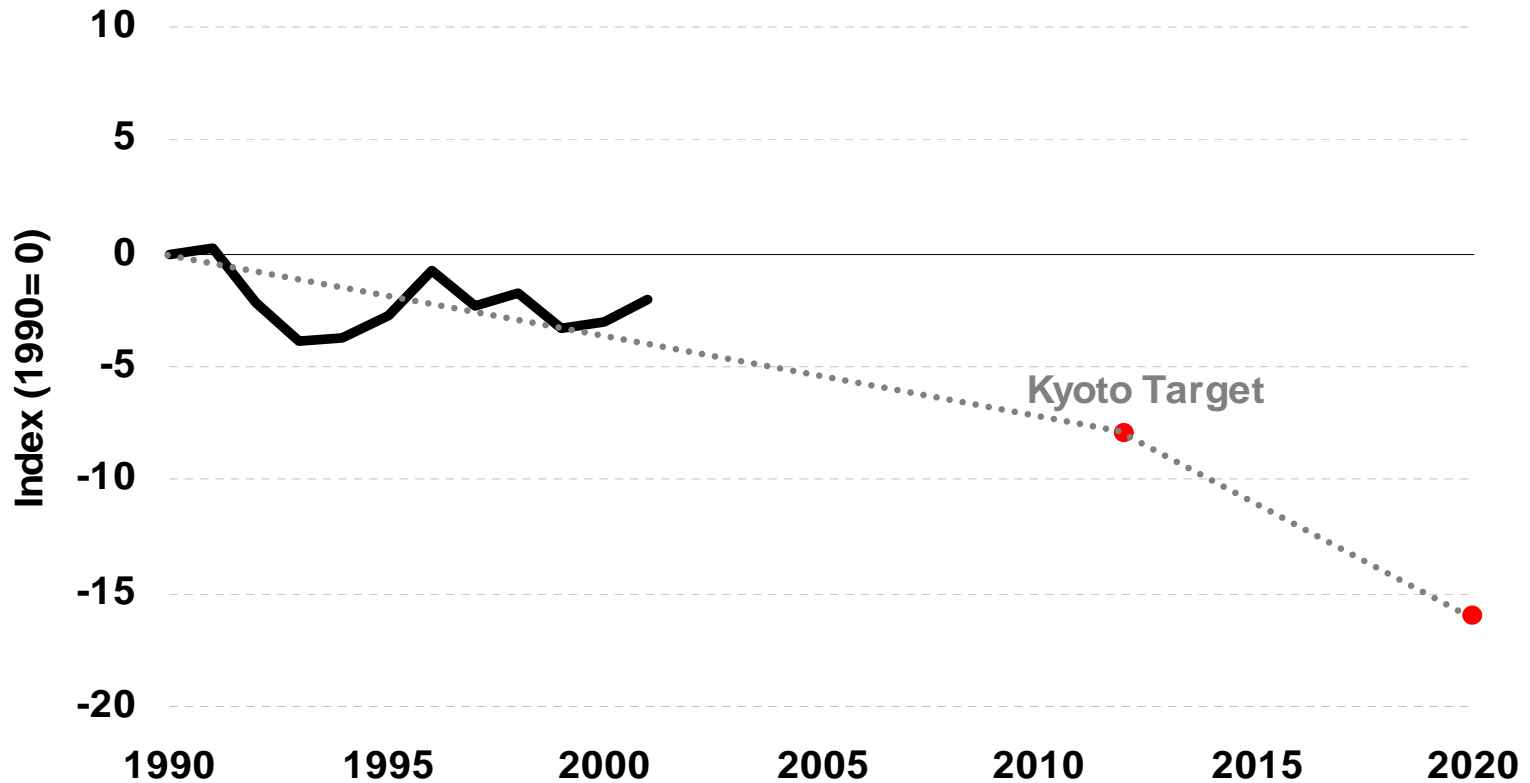


- ❖ **Achievement of the Kyoto target**
- ❖ **Compliance with air quality Directives and compliance with Directive on national emission ceiling**



Climate Change Greenhouse Gas Emissions

European Commission - DG Environment



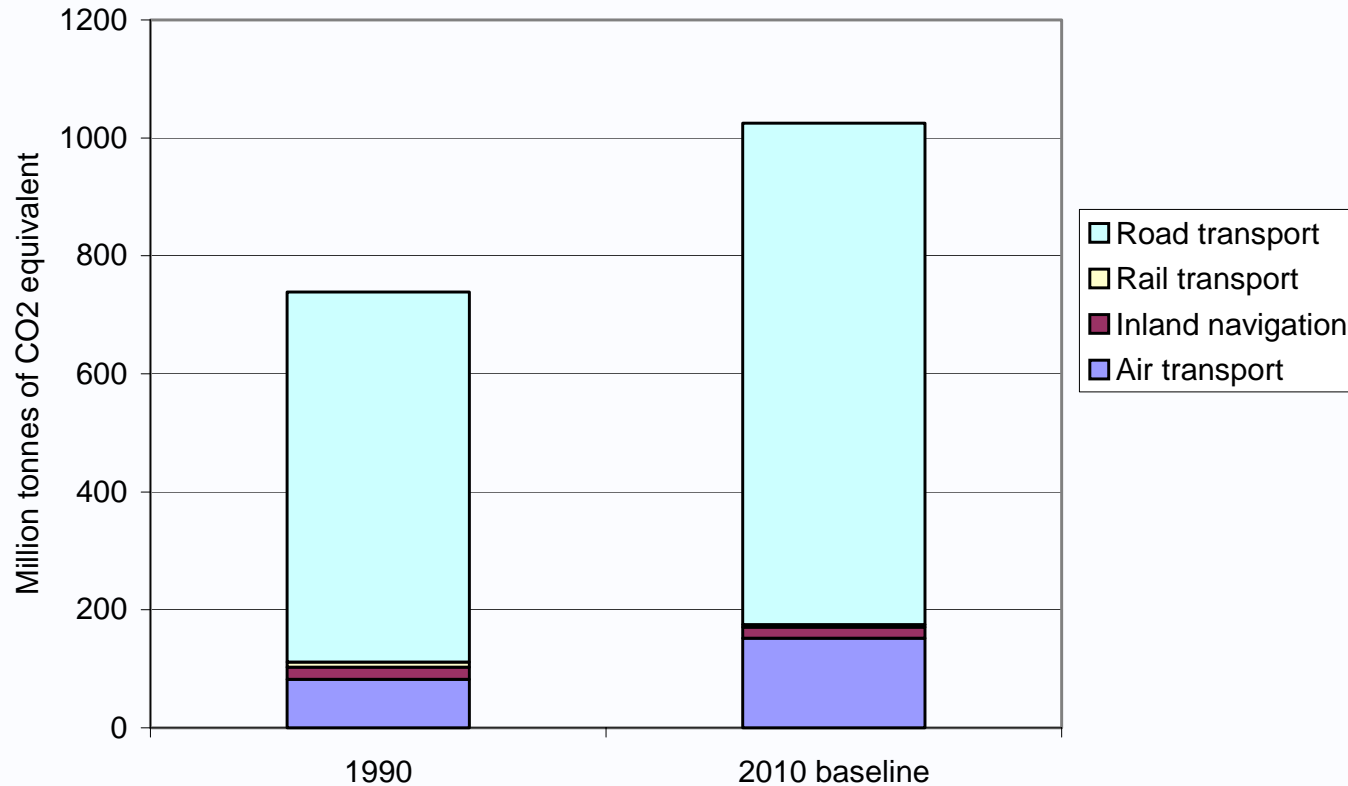


Climate change

European Commission - DG Environment



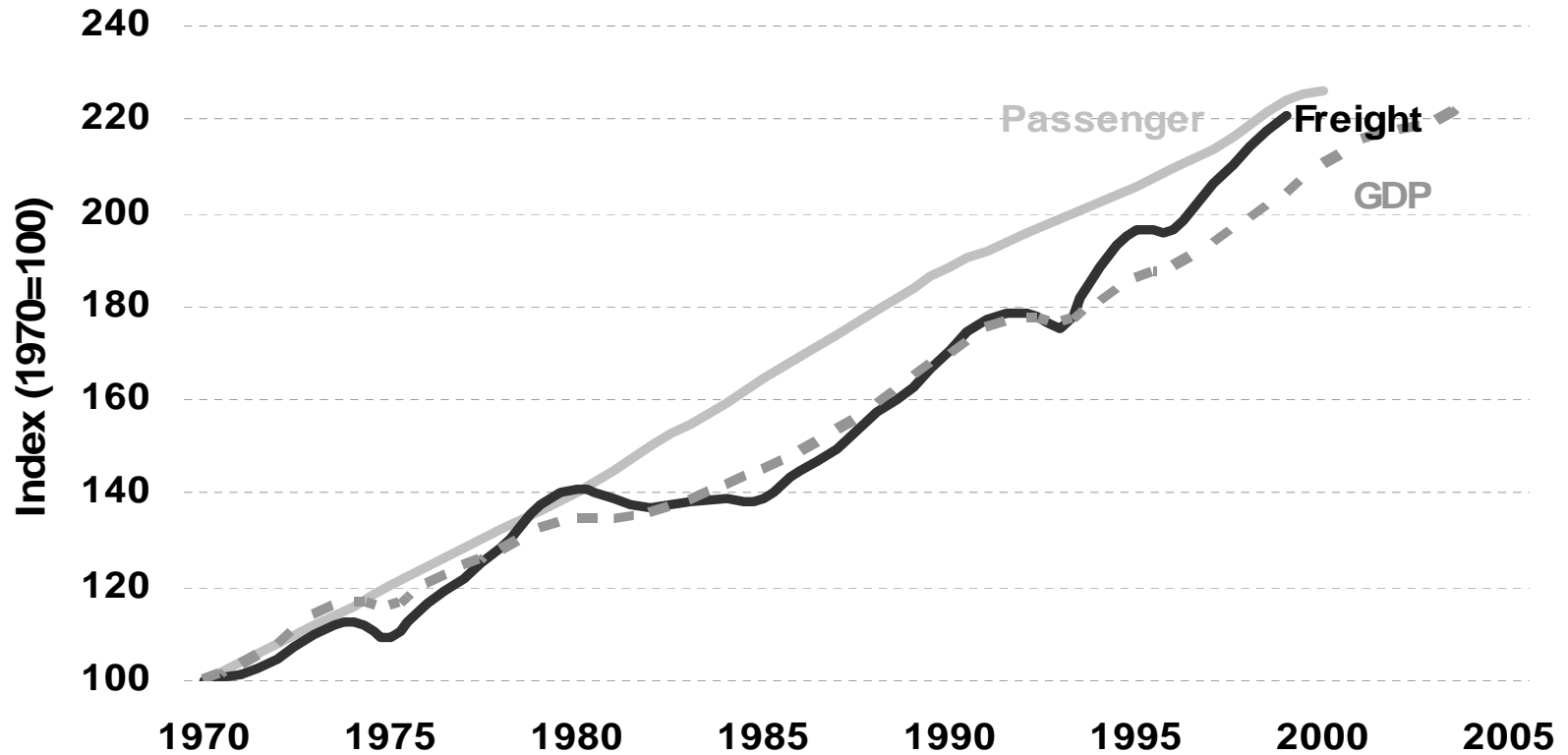
CO2 emissions per transport mode, 1990 and 2010 (projected) in EU15 (PRIMES Baseline Projection)





Transport Volume

European Commission - DG Environment



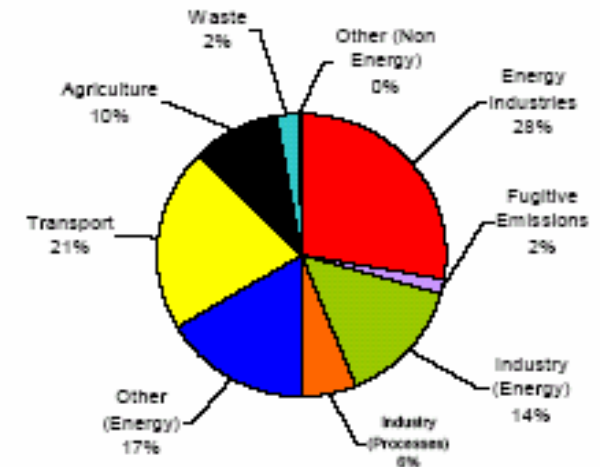
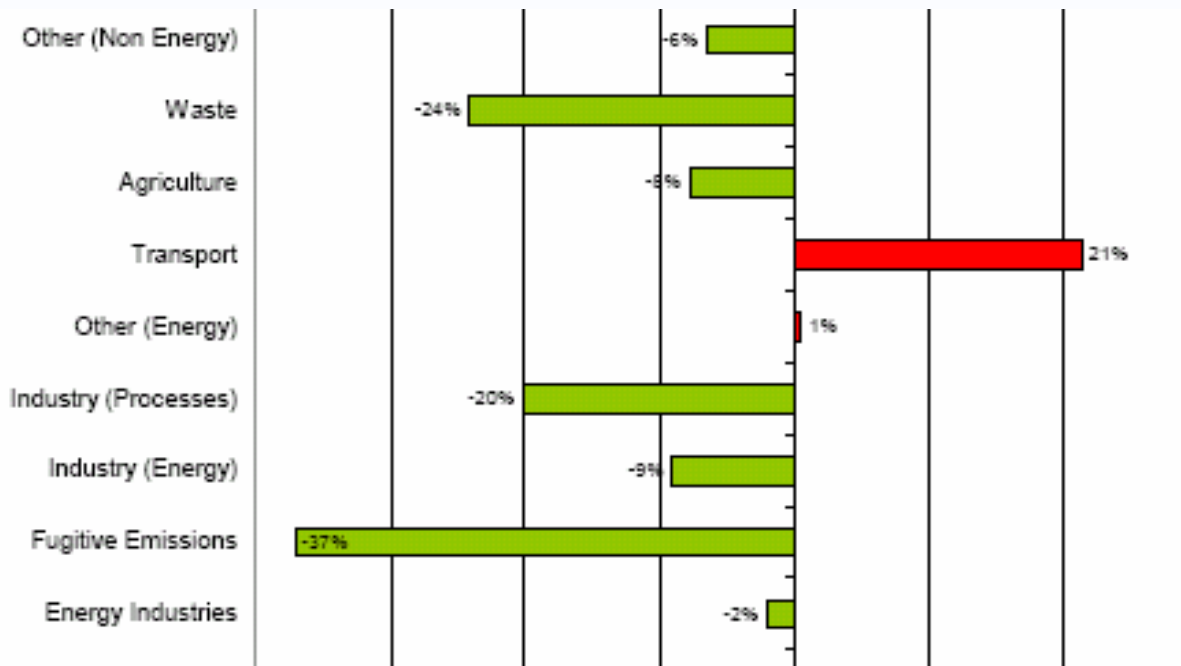


Climate change

European Commission - DG Environment



Change in / share of EU-15 emissions of GHG emissions by sector 1990–2001





CO2&cars strategy

European Commission - DG Environment



- ◆ **Community target for new registrations (EU 15): 120 g CO₂/km, defined in 1995**
- ◆ **Three pillar strategy:**
 - ❖ **Voluntary Commitments of the car industries**
 - ❖ **Fuel efficiency labelling**
 - ❖ **Fiscal measures**
- ◆ **Two pillars erected; fiscal measures still pending**

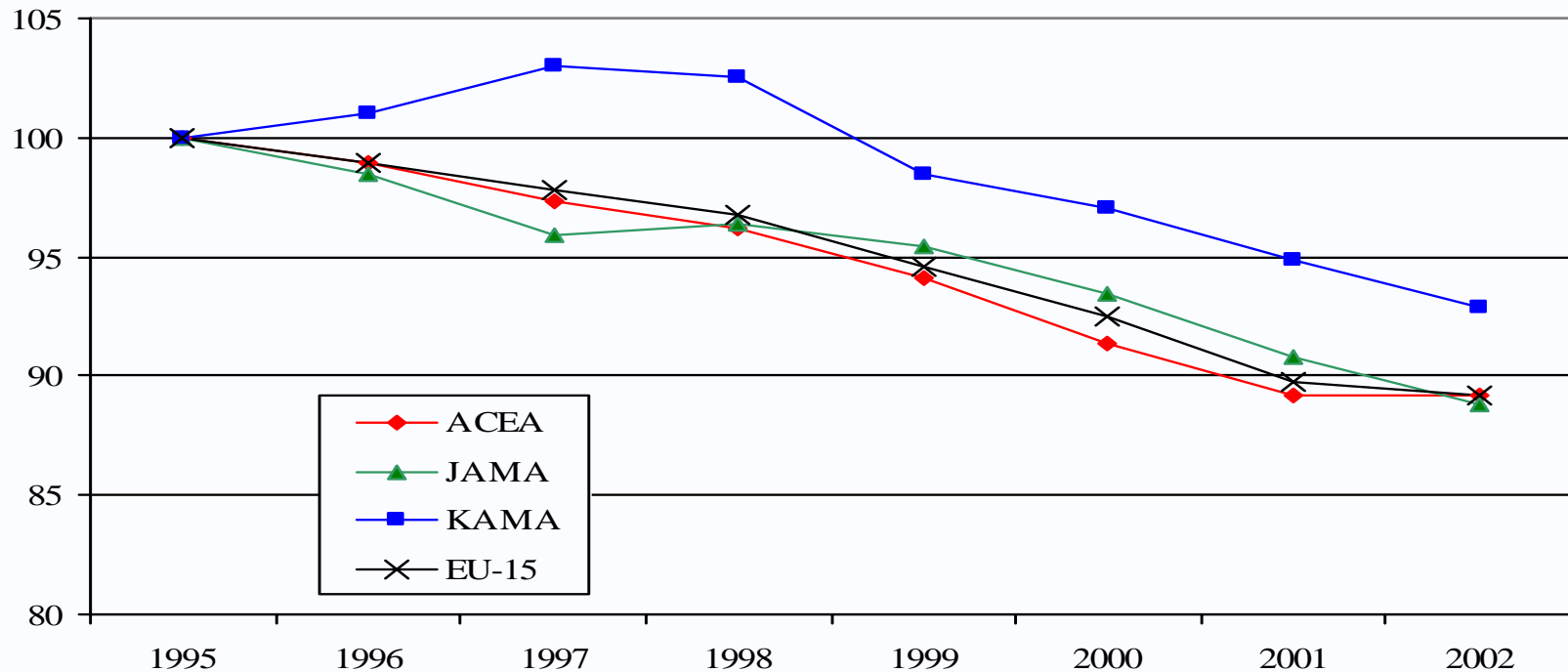


Progress made so far

European Commission - DG Environment



Average specific CO₂ emissions for new vehicles: Relative to 1995 value





Diesel versus gasoline

European Commission - DG Environment



- ◆ **Reduction all new vehicles: 10.8 %**
- ◆ **Reduction new diesel vehicles: 12.3 %**
- ◆ **Reduction new gasoline vehicles: 9.0 %**
- ◆ **Diesel share 1995: 22.2 % of new vehicles**
- ◆ **Diesel share 2002: 40.7 % of new vehicles**

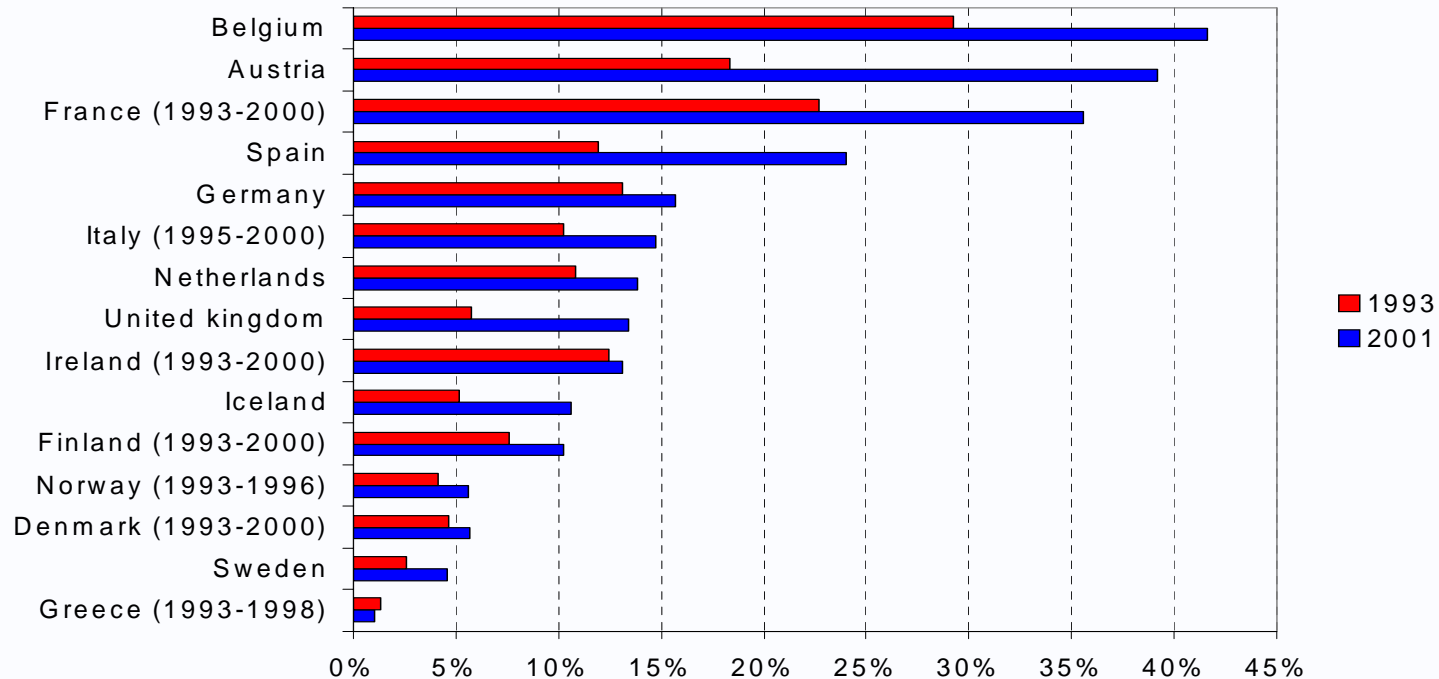


Fuels: Diesel vs. gasoline



European Commission - DG Environment

Share of diesel cars in passenger car fleet in the EU, Iceland and Norway, in 1993 and 2001

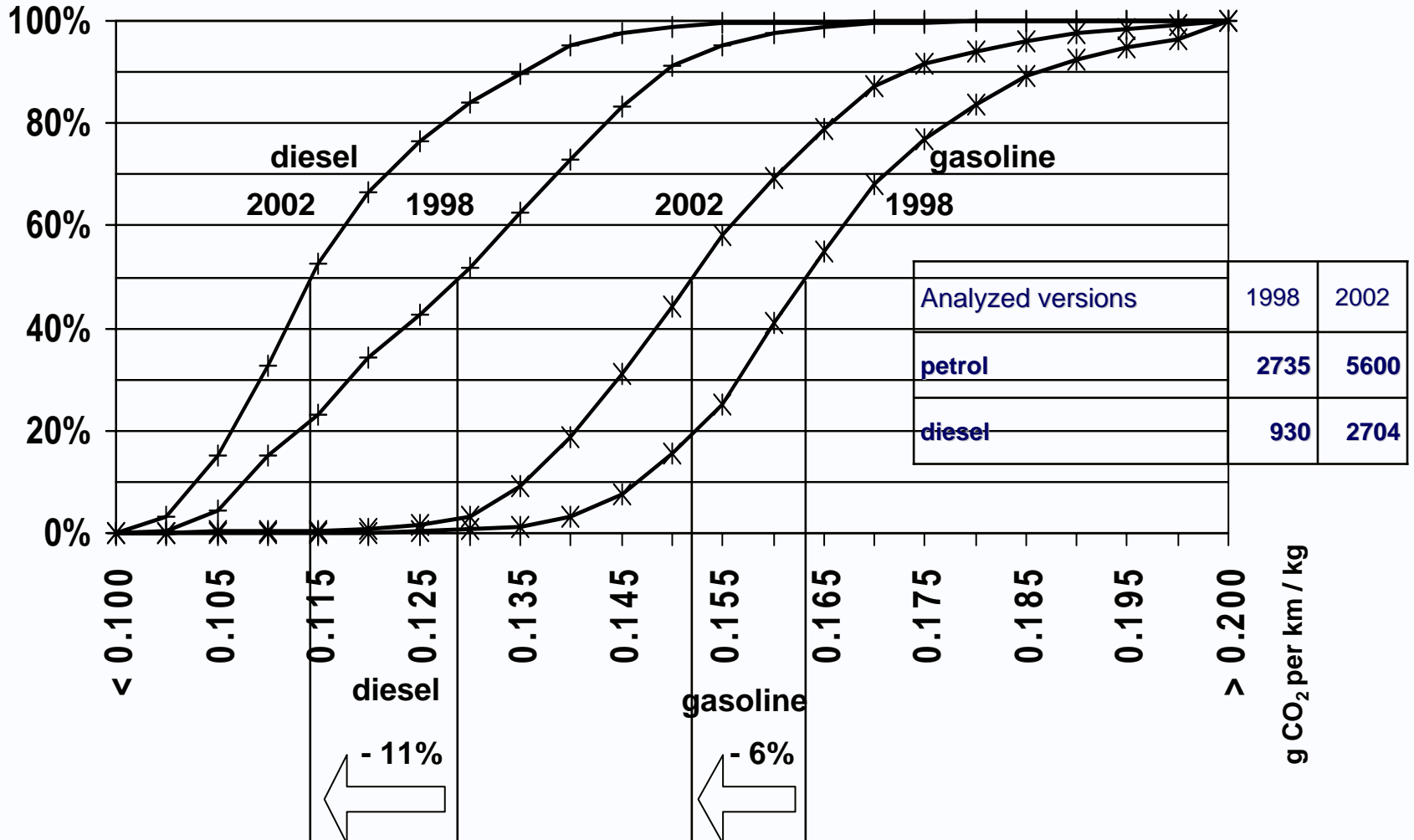




CO₂ Emissions Per Weight

(new passenger cars)

European Commission - DG Environment





Mobile air conditioning



European Commission - DG Environment

- **Commission Proposal COM(2003)492 (11 August 2003) aiming at phasing out R134a**
- **Regulation allows flexibility for different strategies, e.g. innovators can bring R774, R152a or R290 early and earn quotas, all can buy time by taking the “enhanced” route, some can buy quotas**
- **Expected to reduce GHG emissions by about 25 Mt CO₂eq**
- **Work on reducing additional fuel consumption under way; could save another 10 Mt CO₂eq**



Air quality legislation



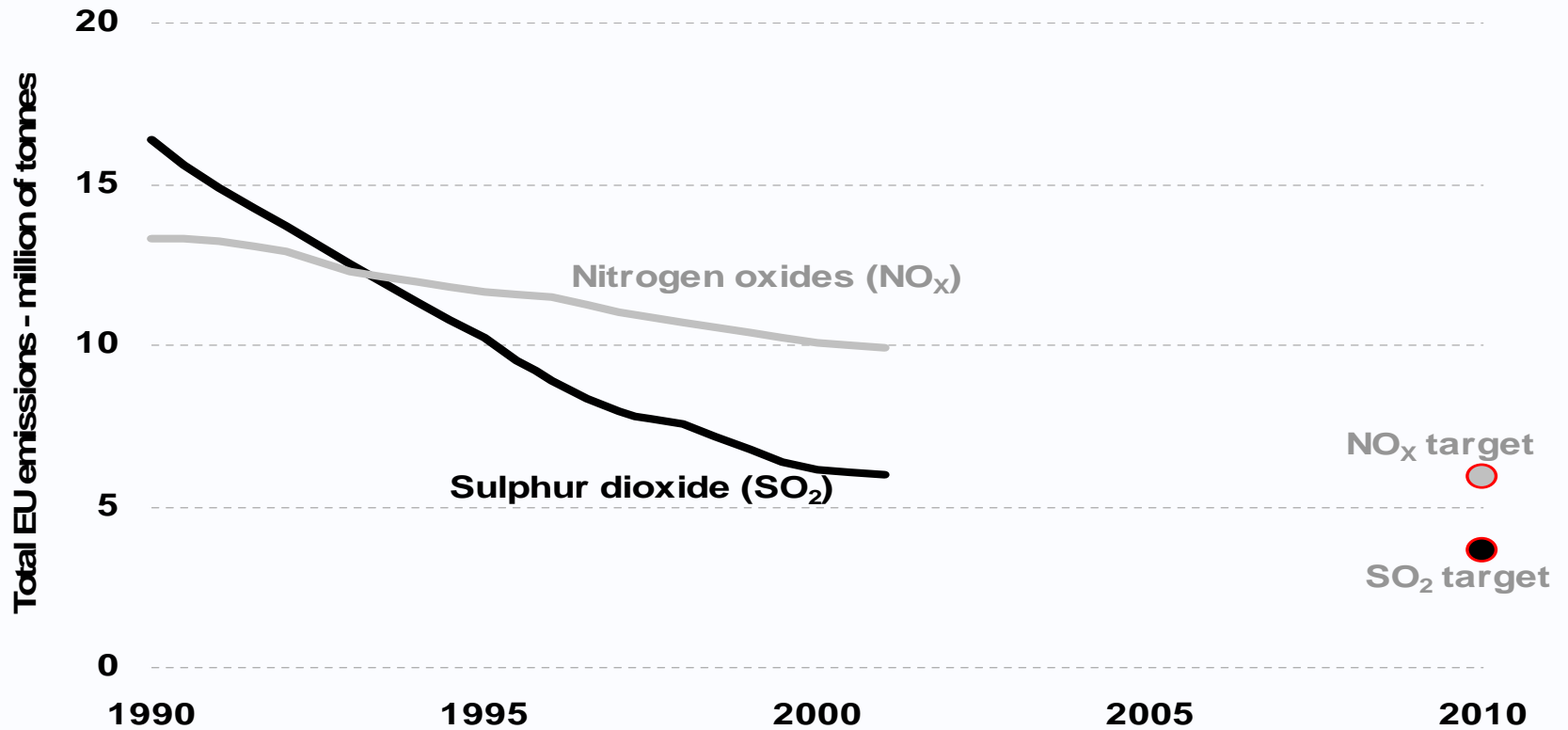
European Commission - DG Environment

- ❖ **Directive 1999/30/EC : SO₂, NO_x, Pb and Particulate Matter**
- ❖ **Directive 2000/69/EC : CO and Benzene**
- ❖ **Directive 2002/03/EC : Ozone**
- ❖ **Proposal : Heavy metals (As, Cd, Ni, Hg) and PAH [B(a)P as marker]**



Air Emissions

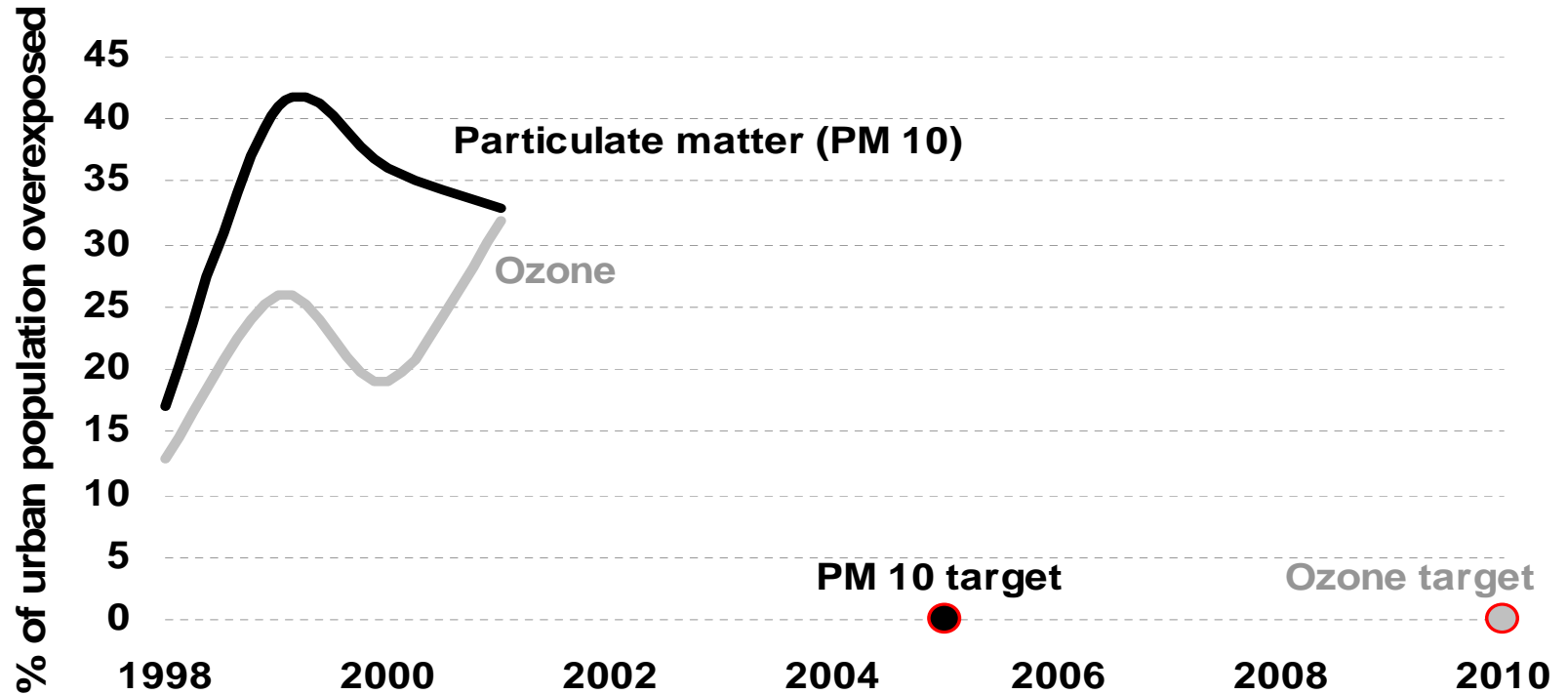
European Commission - DG Environment





Urban Air Quality

European Commission - DG Environment





National Emission Ceilings Directive

European Commission - DG Environment



- ◆ **Sets emission ceilings for sulphur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOC) and ammonia (NH₃) to be attained by 2010**
- ◆ **Objectives: reduce acid deposition (SO₂, NO_x, ammonia) and ground level ozone (NO_x, VOC)**

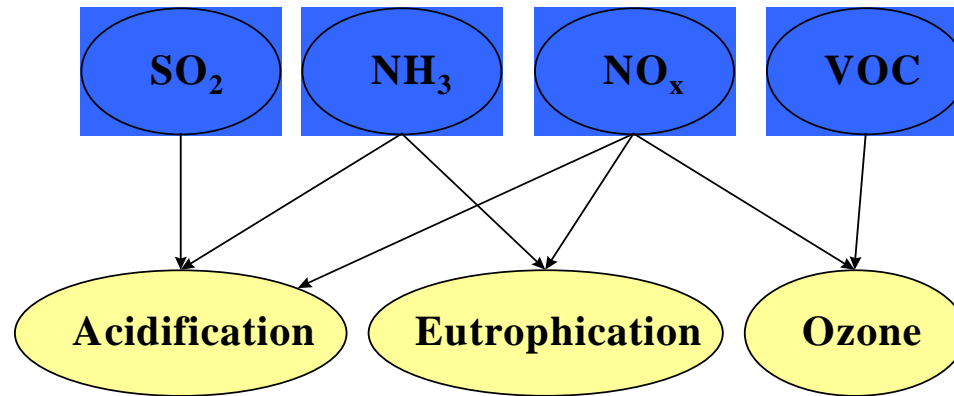


Multi-pollutant

European Commission - DG Environment



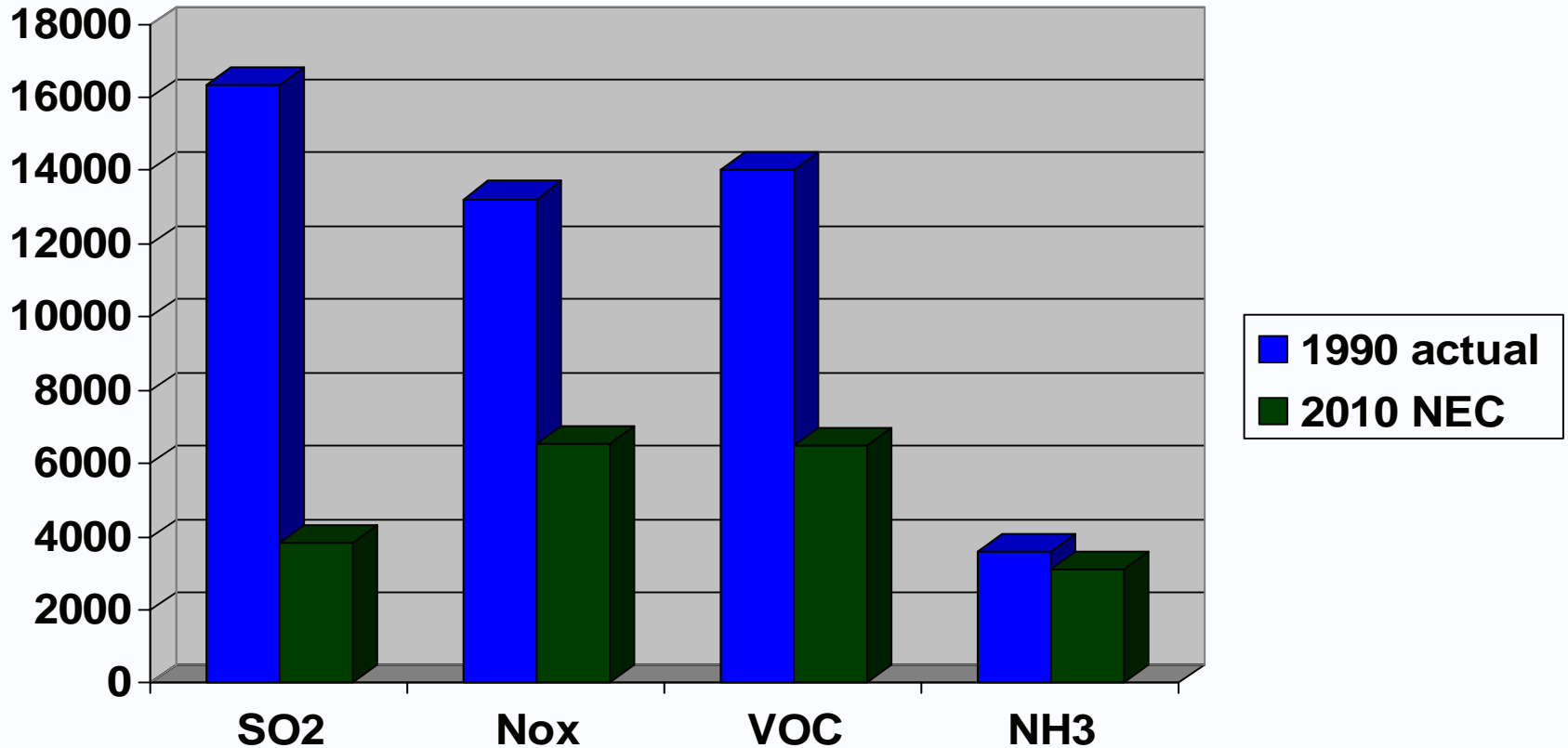
Interlinked pollutants and problems





Emissions (Kt)

European Commission - DG Environment



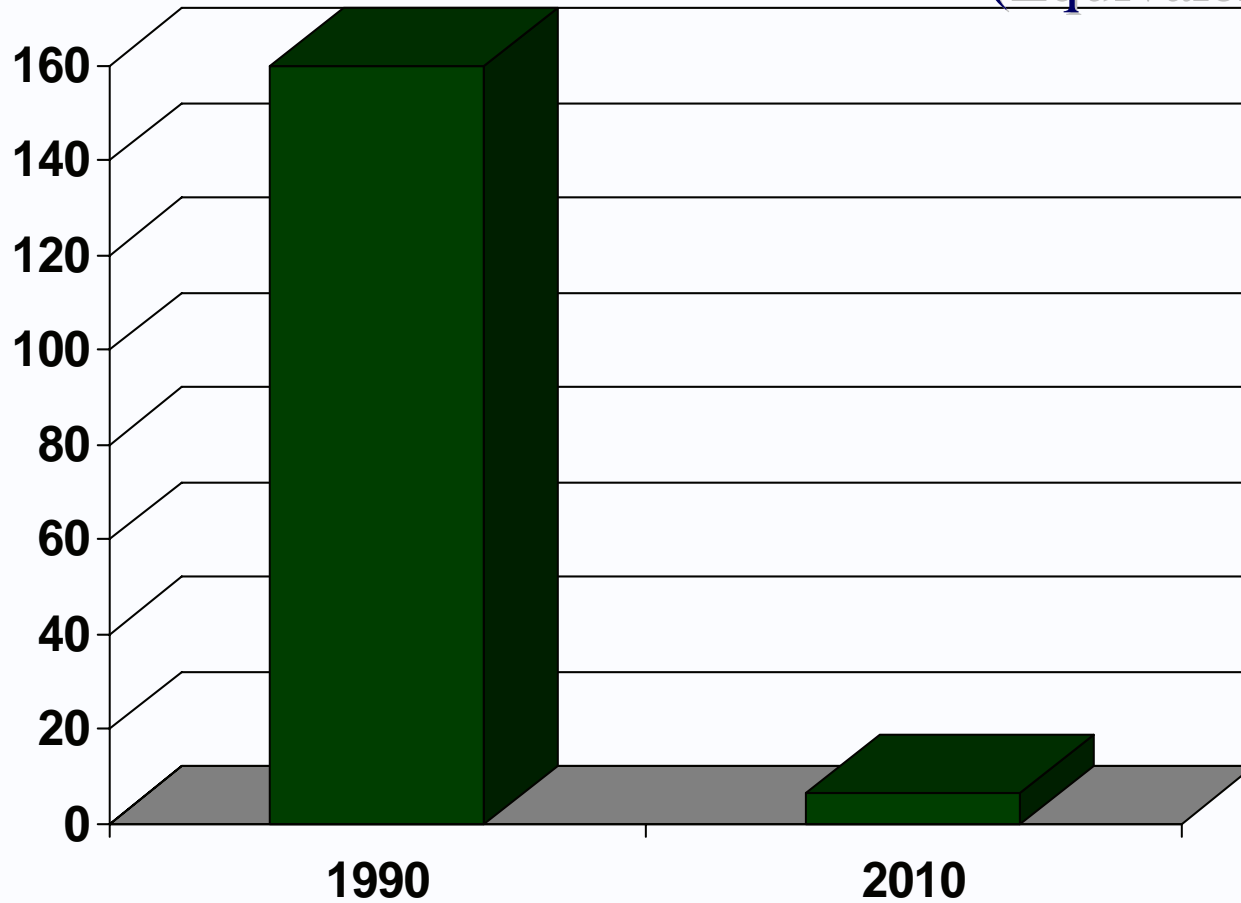


Excess Acid Deposition

European Commission - DG Environment



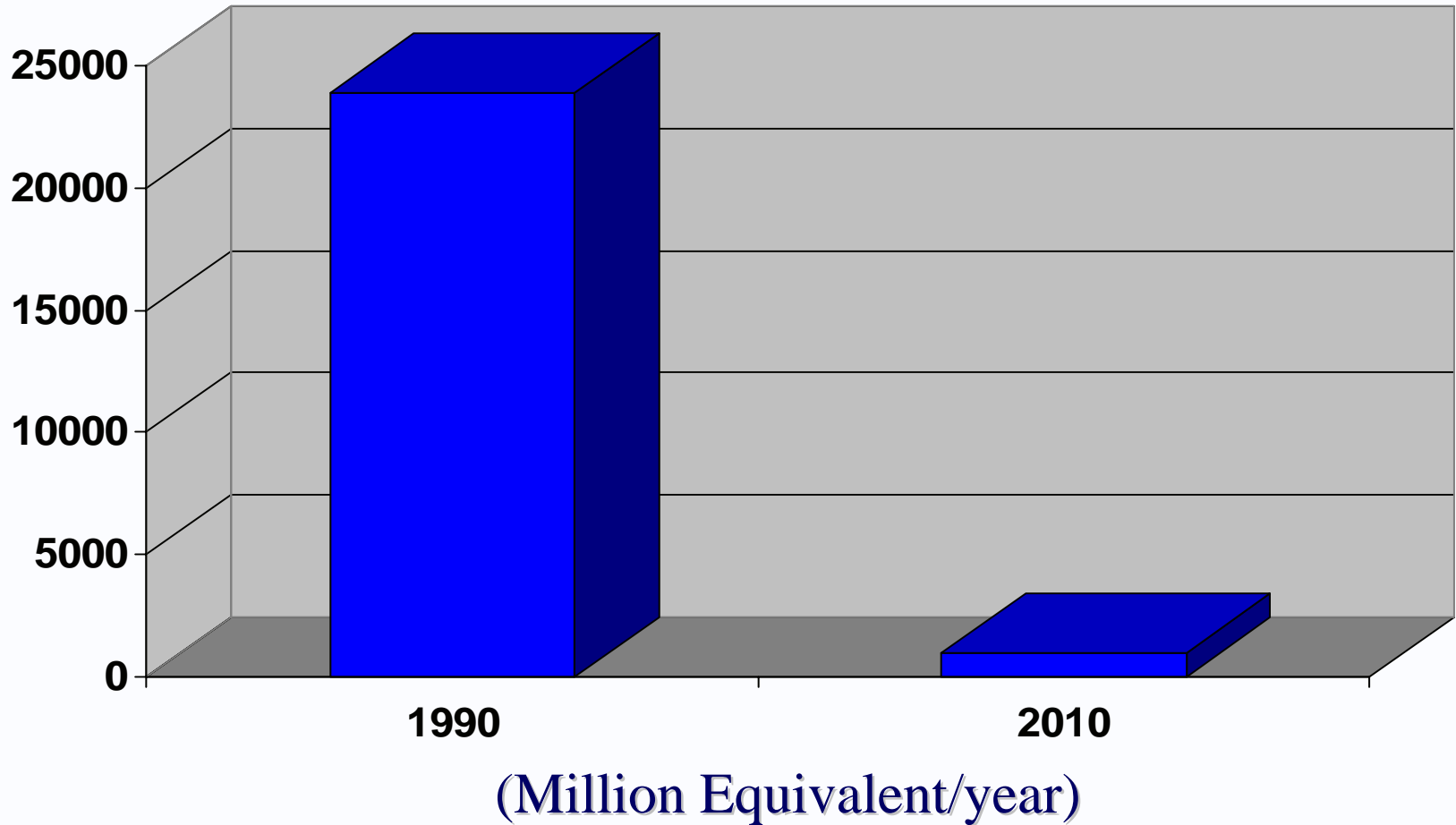
(Equivalents/ha/year)





Excess Acid Deposition

European Commission - DG Environment



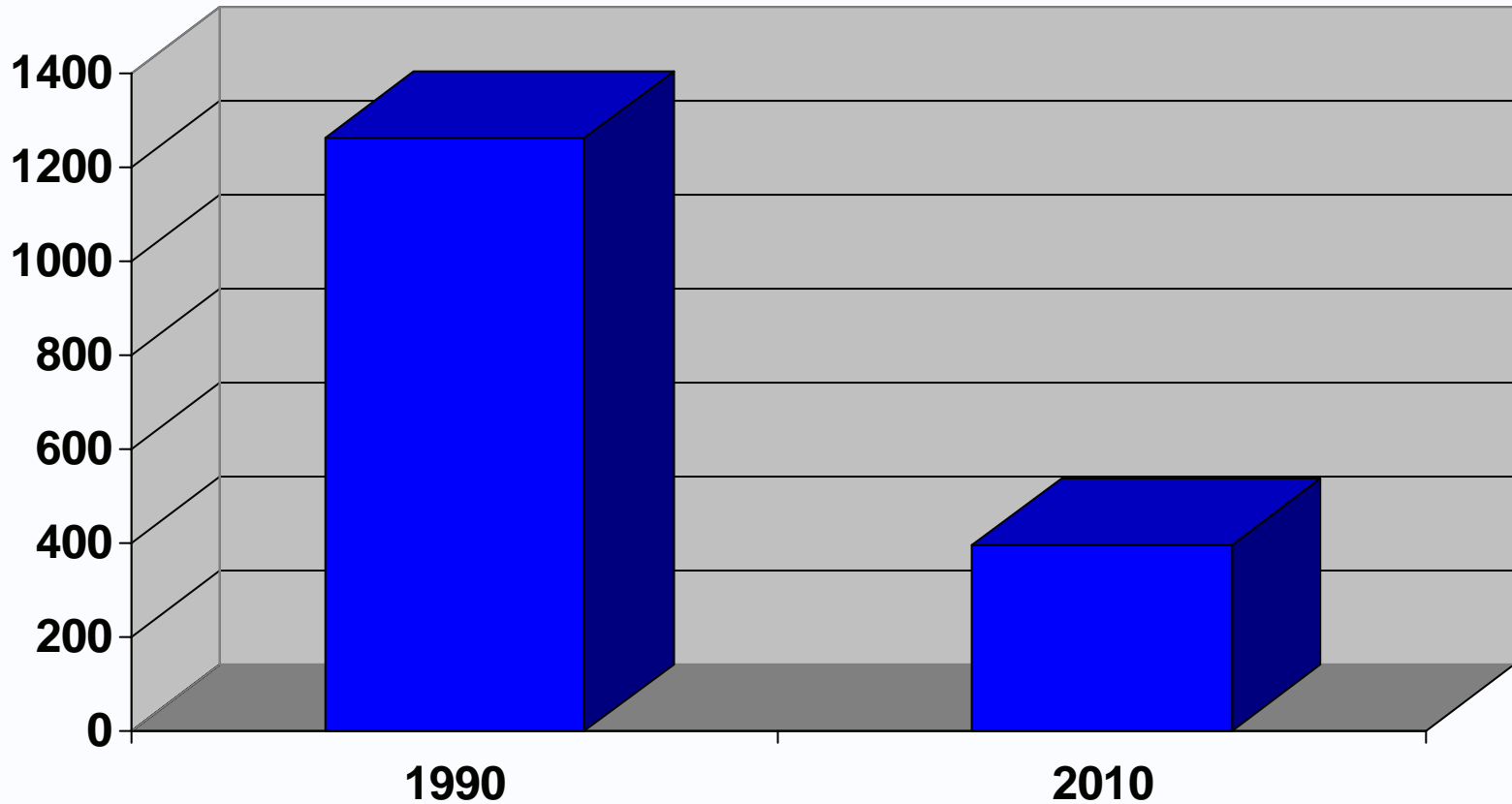


Exposure to Ozone

European Commission - DG Environment



(million persons*ppm*hours)



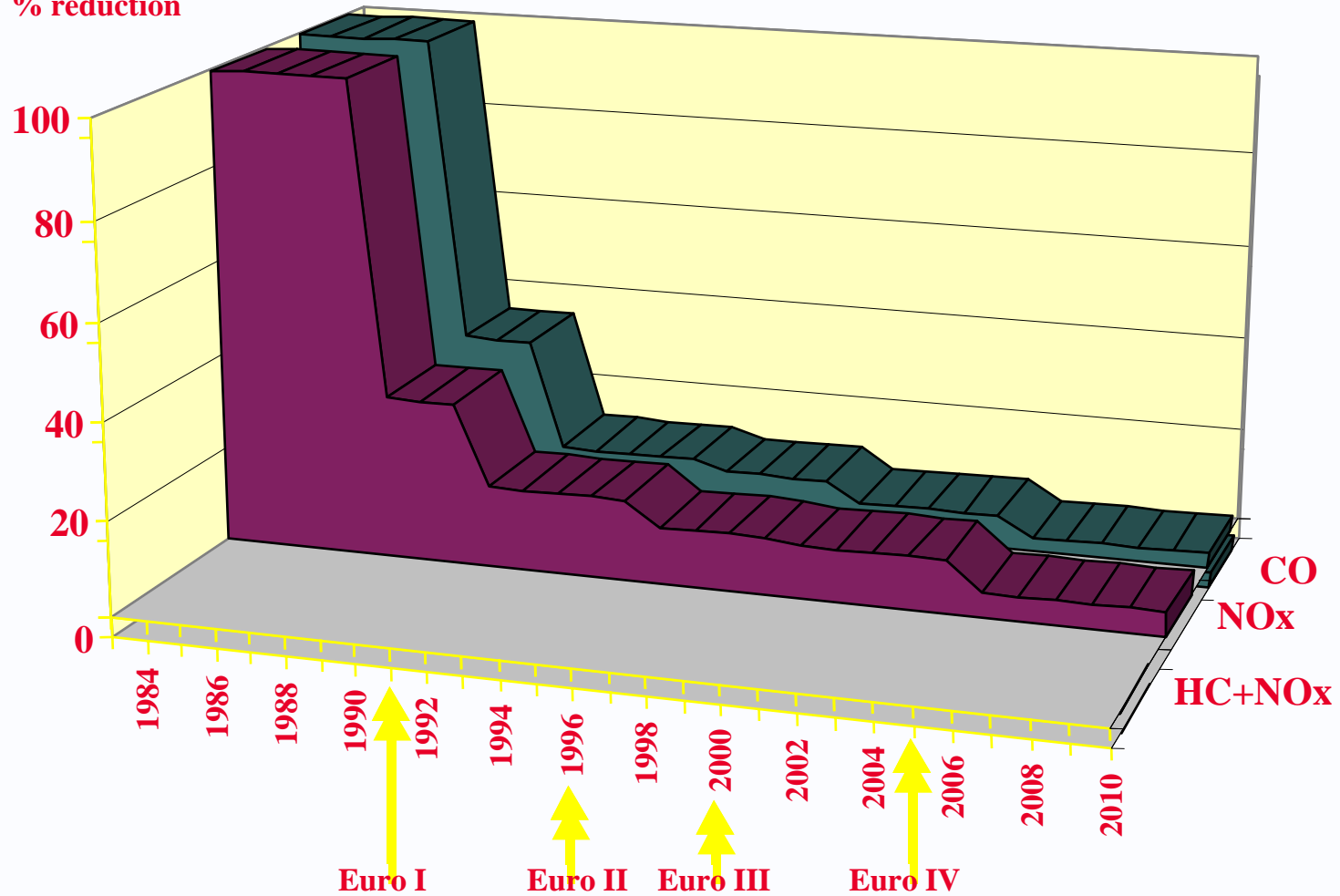


Petrol cars

European Commission - DG Environment



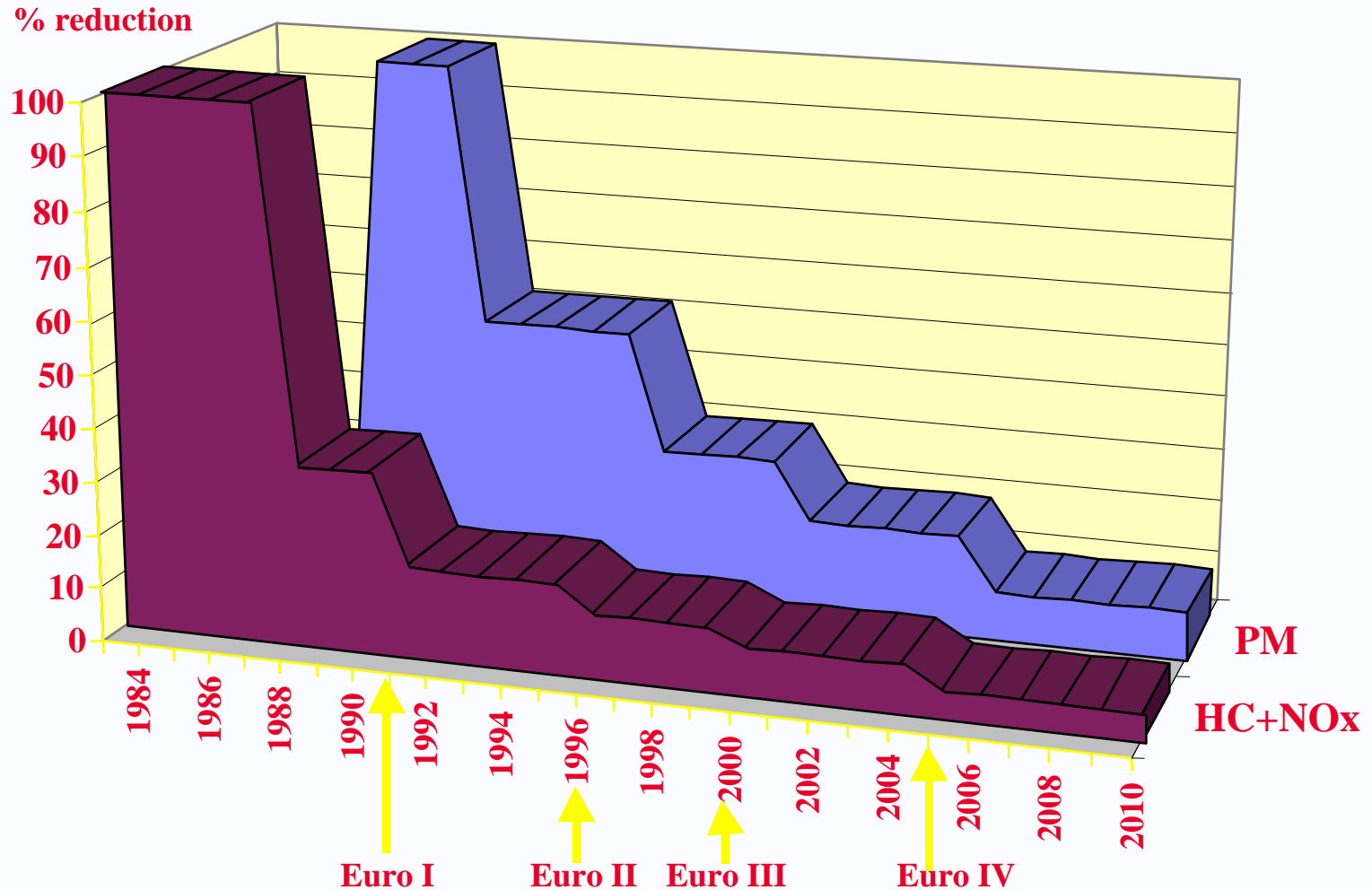
% reduction





Diesel cars

European Commission - DG Environment



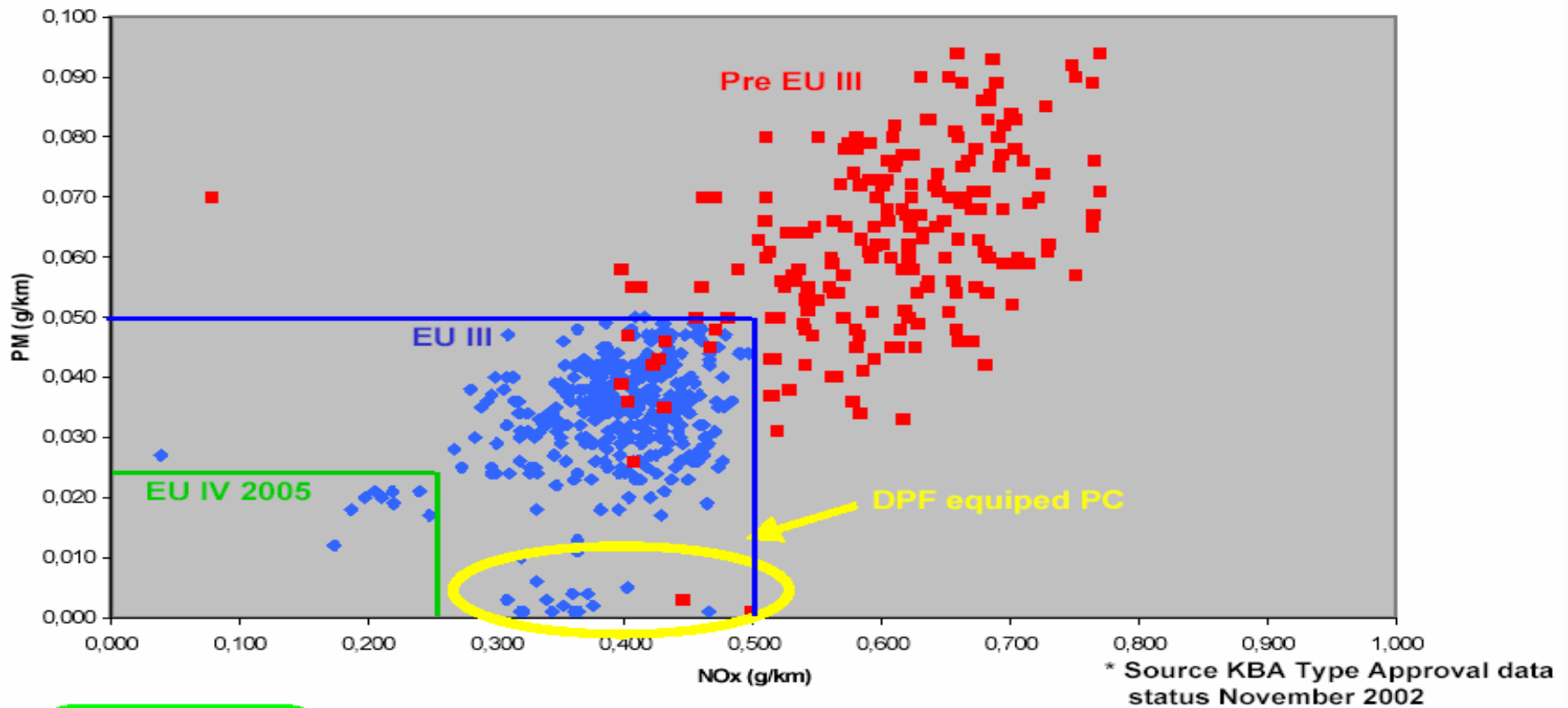


Emission standards

European Commission - DG Environment



EU diesel passenger cars – type approval values





1998 fuel legislation

(Directive 98/70/EC)

European Commission - DG Environment



- Directive 98/70/EC: set of specifications
 - » From 1 January 2000:
 - Leaded petrol banned
 - Sulphur in petrol 150 ppm,
 - Benzene in petrol < 1%; Aromatics < 42%
 - Sulphur in diesel < 350 ppm
 - » From 1 January 2005
 - Sulphur content of petrol & diesel < 50 ppm
 - Aromatics in petrol < 35%



Zero sulphur review

European Commission - DG Environment

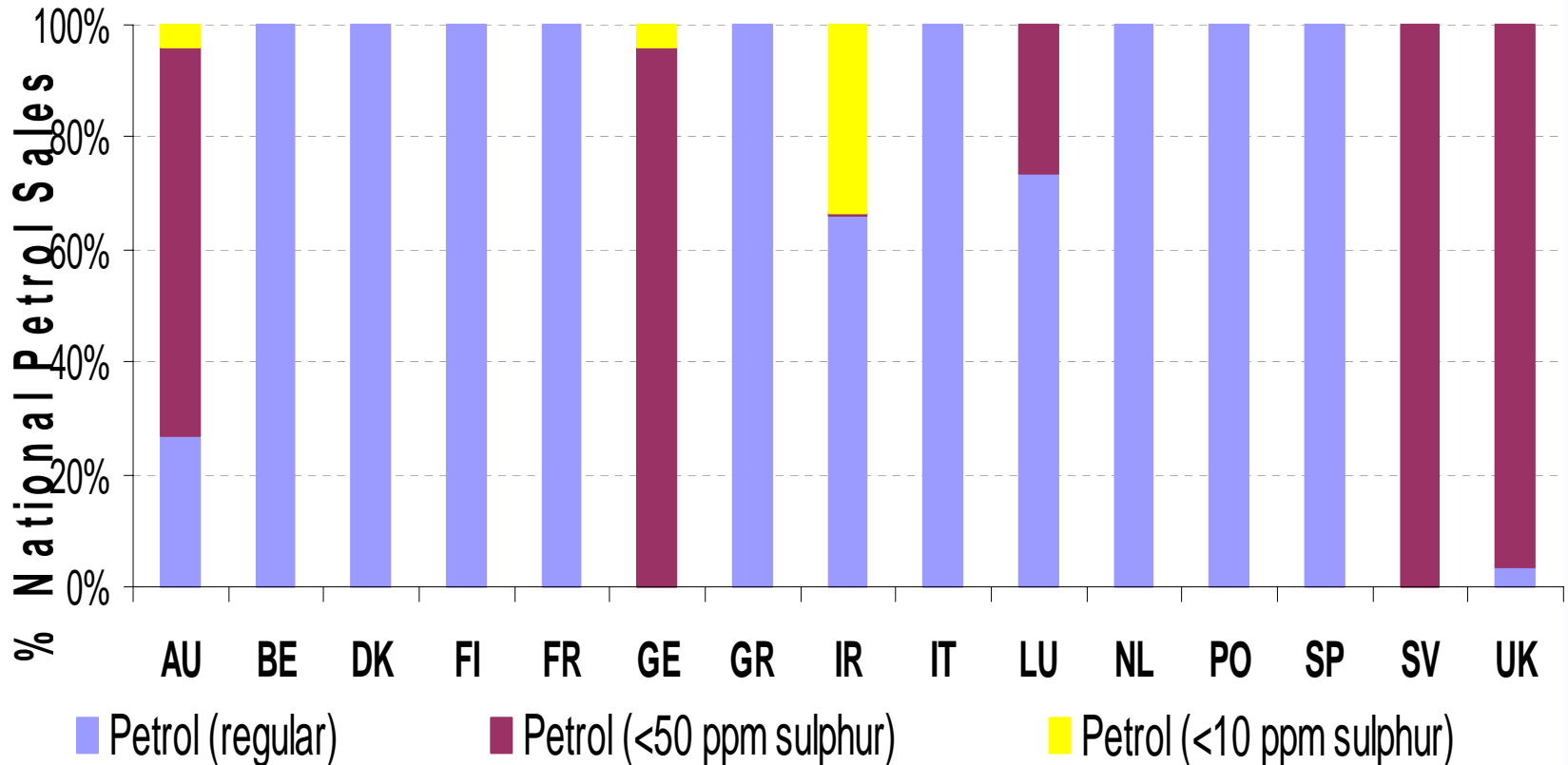


- Results of the review: 10 ppm
 - » **Petrol:**
 - Improves the fuel economy of post-2005 gasoline direct injection cars of 1 – 5%,
 - Reduces the emissions of conventional pollutants from the existing fleet
 - » **Diesel:**
 - Facilitates the usage of NOx storage traps
 - Facilitates the compliance with EURO IV/V standards for HDV
 - Improves the fuel economy and reduces the emissions of particles
- **Mandatory Availability from 1 Jan 2005**
 - Full market switchover to 10 ppm sulphur petrol 1 Jan 2009



2002 petrol fuel

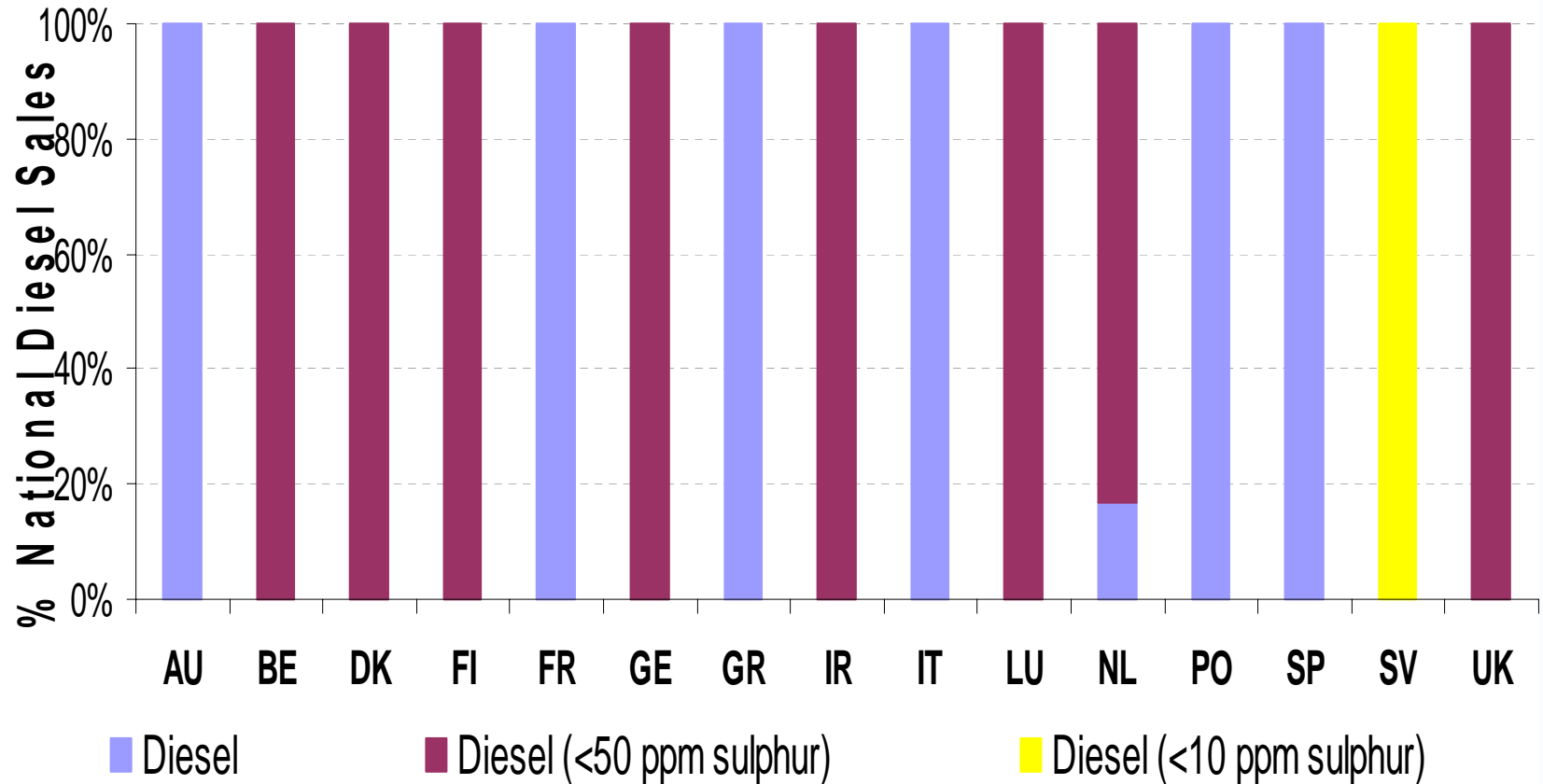
European Commission - DG Environment





2002 diesel fuel

European Commission - DG Environment





For the Future

European Commission - DG Environment



- ◆ Clean Air for Europe (CAFÉ) Programme
 - ❖ Advice from WHO on air pollution health impact
 - ❖ Address air quality at regional and urban scales
 - ❖ Integrated assessment of air quality policy option scenarios

- ◆ Review fuel quality Directive by 31 December 2005
 - ❖ Overall objective: review the fuel specifications for non-sulphur parameters
 - Targets: future requirements of Community vehicle emissions, air quality legislation and related objectives



Outlook / Driving Forces

European Commission - DG Environment



- ◆ **Several environmental objectives**
 - ❖ **Air quality (NO_x, PM, Ozone), Greenhouse gases**

- ◆ **Development of EURO V standards**
 - ❖ **Council Conclusions Dec 2000**
 - ❖ **MVEG Sub Group already at work on technology cost and performance data for input to CAFÉ**
 - ❖ **Have been asked to indicate fuel quality implications if appropriate**

- ◆ **Phasing in non-conventional fuels**
 - ❖ **New Bio-fuels Directive**

- ◆ **Functioning of Technology**
 - ❖ **Issues not presently covered by Directive 98/70**



Fuel Quality Review (I)

European Commission - DG Environment



- ◆ Fuel quality versus emissions – relationship
 - ❖ Consider output from MVEG Euro V sub-group - fuel quality implications - increased refining costs etc - input to CAFÉ

- ◆ Final date for 10 ppm sulphur diesel (1Jan 2009 ?)
 - ❖ How to address greenhouse gas balance question



Fuel Quality Review (II)

European Commission - DG Environment



- ◆ Biofuels
 - ❖ **Assess issues from bio-fuel directive – vapour pressure specifications, consequences for VOC emissions, limits on oxygenates etc., ongoing work in CEN, other consideration**
- ◆ Off Road applications
 - quality implications in view of new directive**
- ◆ Metallic additives & other issues



Useful Web Links



European Commission - DG Environment

- ◆ **DG ENVIRONMENT**

http://www.europa.eu.int/comm/environment/policy_en.htm#b

- ◆ **DG ENTERPRISE**

<http://europa.eu.int/comm/enterprise/automotive/index.htm>

- ◆ **DG TRANSPORT AND ENERGY**

http://europa.eu.int/comm/dgs/energy_transport/index_fr.html

- ◆ **DG TAXATION AND CUSTOMS UNION**

http://www.cc.cec/home/dgserv/taxud_en.html
