Enerdata

Training Seminar
Evaluation of energy efficiency trends and potentials
Grenoble, 30 January – 10 February 2006

GHG emissions
: case of CO2 *energy*

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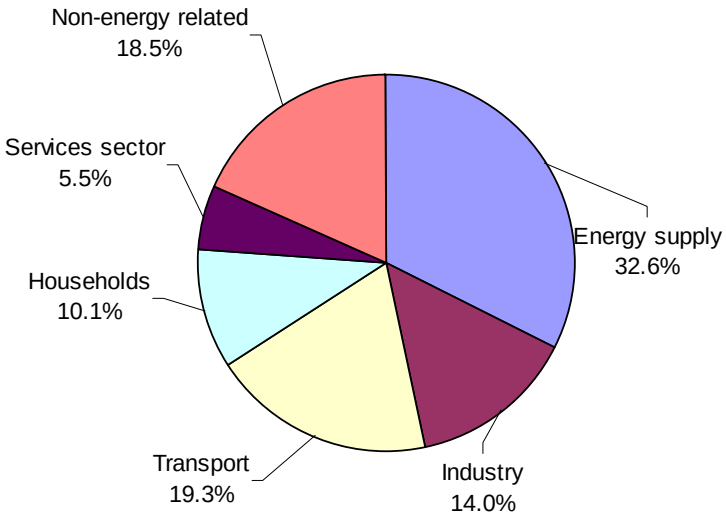
GHG emissions by source in 2003, EU-25

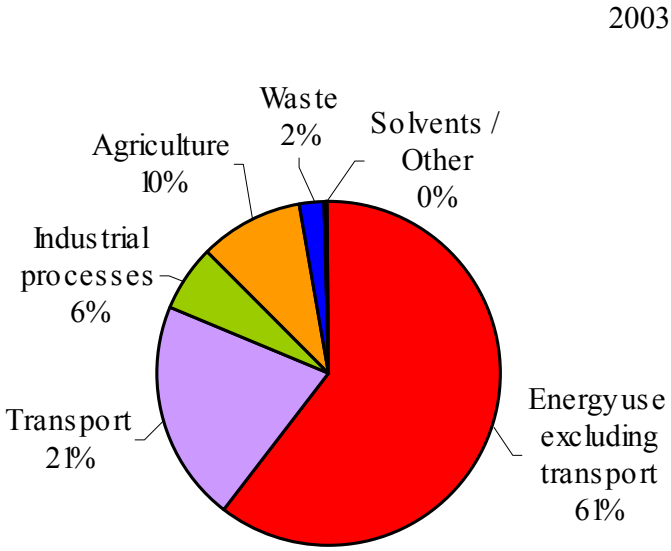


4925 Mt CO_{2eq}
Major gases:

CO_2 82.5%
CH_4 8.2%
N_2O 7.9%

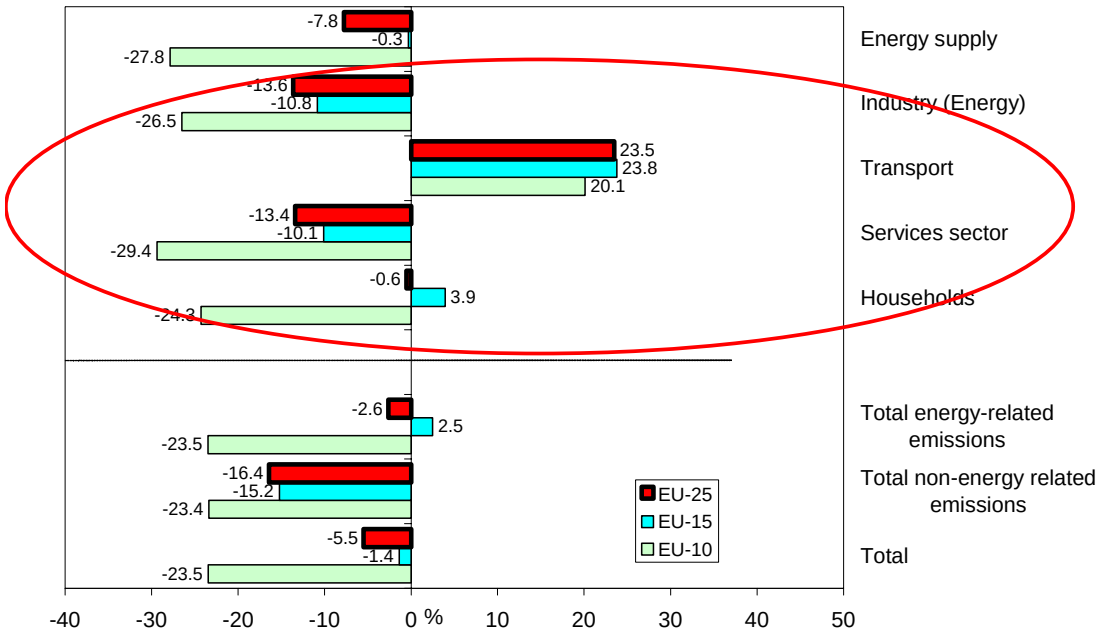
European Environment Agency

EU's sectoral GHG emission, 2003



European Environment Agency

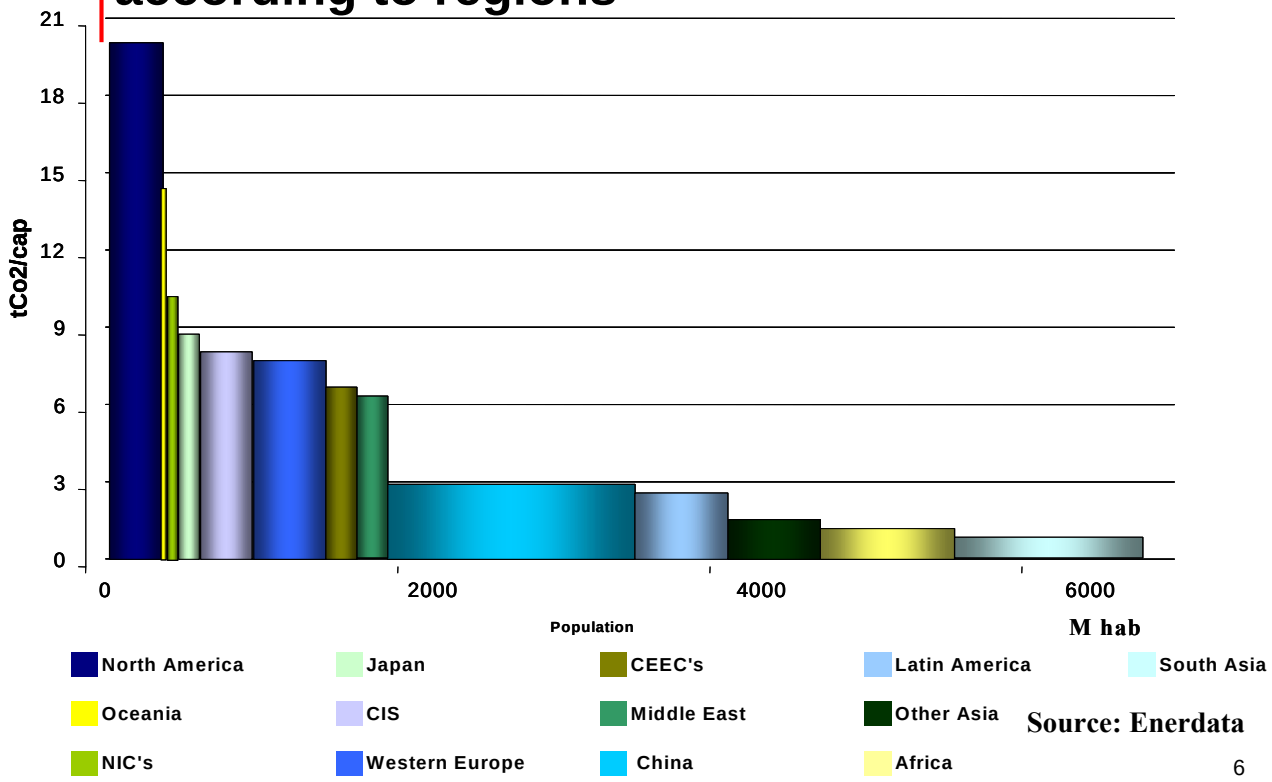
% changes in GHG emissions by source 1990-2003



European Environment Agency

CO2 emissions from energy combustion (energy related)

CO_2 emissions per capita: factor from 1 to 7 according to régions



Source: Enerdata

CO2 emissions inventory:energy related
(EU-15, 2002) (Source EEA)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	MtCO2
Total Energy	3 231
A. Fuel Combustion Activities (Sectoral Approach)	3 208
1. Energy Industries	1 146
2. Manufacturing Industries and Construction	583
3. Transport	841
4. Other Sectors	630
5. Other *(please specify)* (1)	7
B. Fugitive Emissions from Fuels	23
	0
Memo Items: (2)	0
International Bunkers	242
Multilateral Operations	0
CO_2 Emissions from Biomass	167

Without air international

Air and sea

CO2 emissions inventory:energy related : Cdetails by sector (EU-15, 2002) (Source EEA)

A. Fuel Combustion Activities (Sectoral Approach)	3 208
1. Energy Industries	1 146
a. Public Electricity and Heat Production	965
b. Petroleum Refining	120
c. Manufacture of Solid Fuels and Other Energy Industries	62
2. Manufacturing Industries and Construction	583
3. Transport	841
a. Civil Aviation	23
b. Road Transportation	785
4. Other Sectors	630
a. Commercial/Institutional	154
b. Residential	416
c. Agriculture/Forestry/Fisheries	61
5. Other *(please specify)* (1)	7

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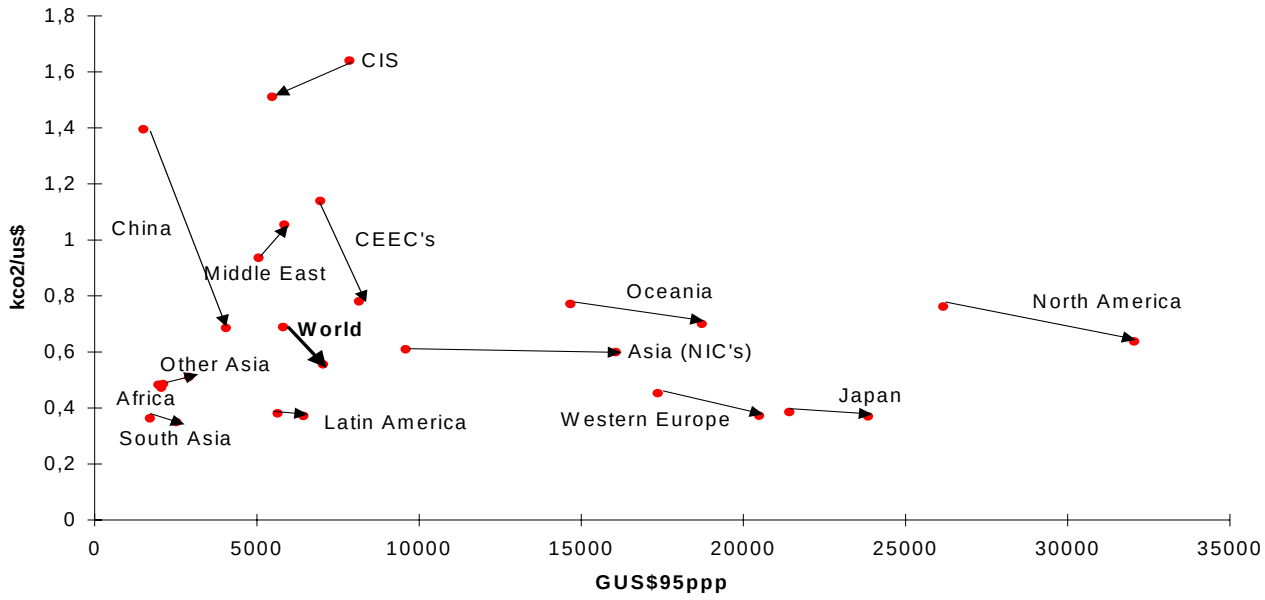
CO2 Intensities
Decrease faster than the energy intensity Ł lower carbon content of energy

CO_2 intensity 1990-2002*



Source: Enerdata

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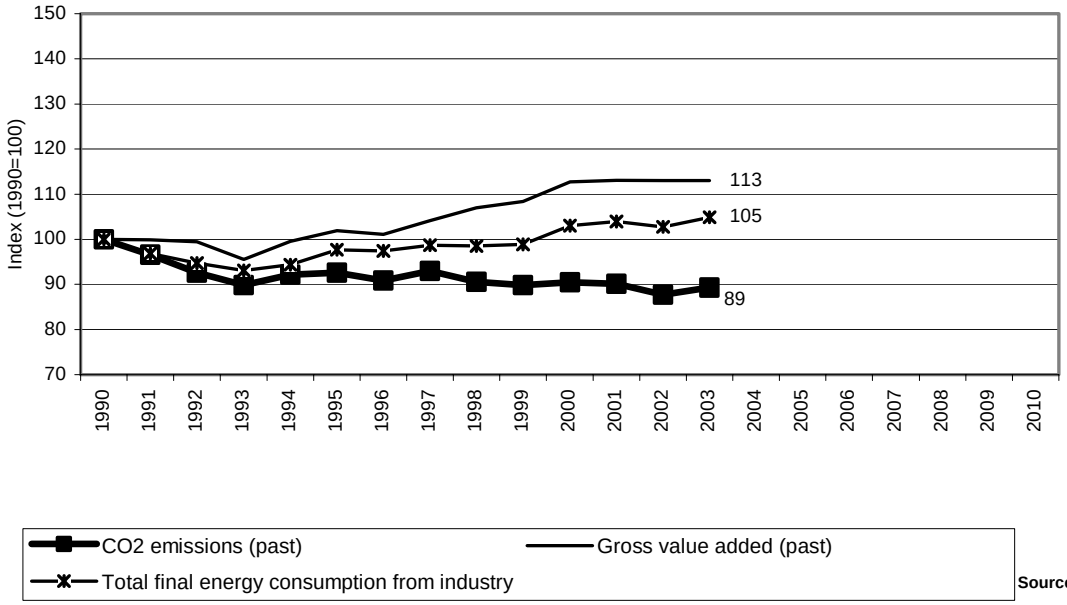
EU-15: CO2 emissions from manufacturing industries and construction, final energy demand and value added



Source: EEA ETC-ACC

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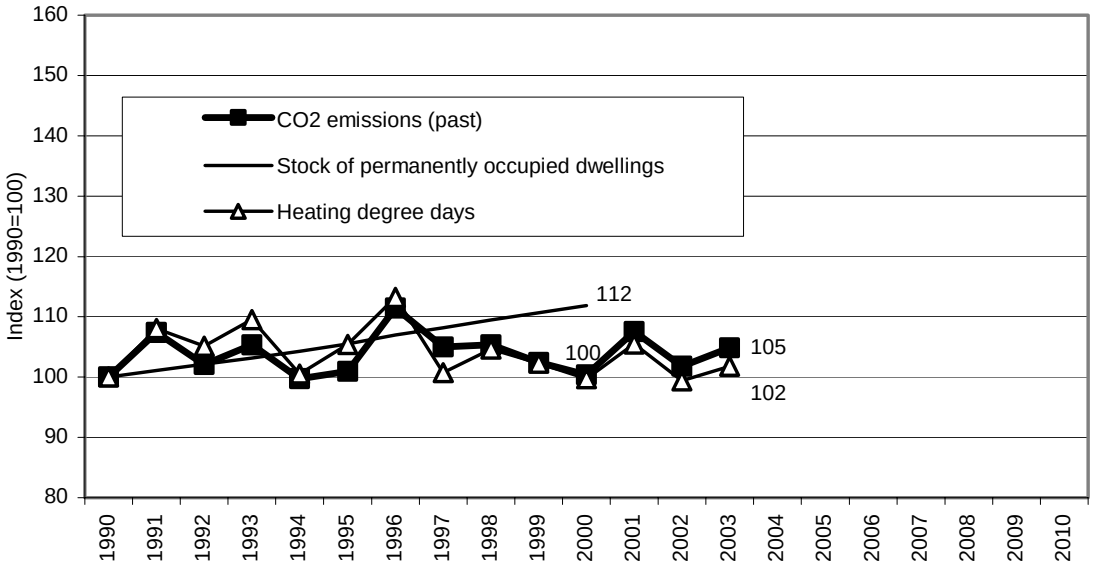
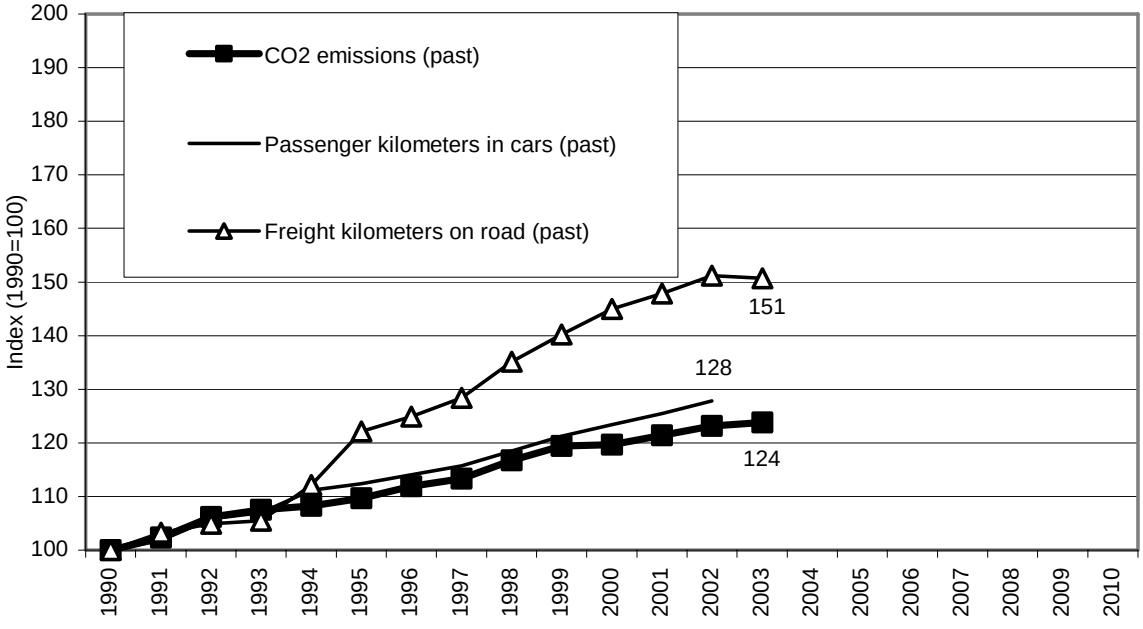
EU-15: CO2 emissions from households, degree days and number of dwellings



Source: EEA ETC-ACC

European Environment Agency

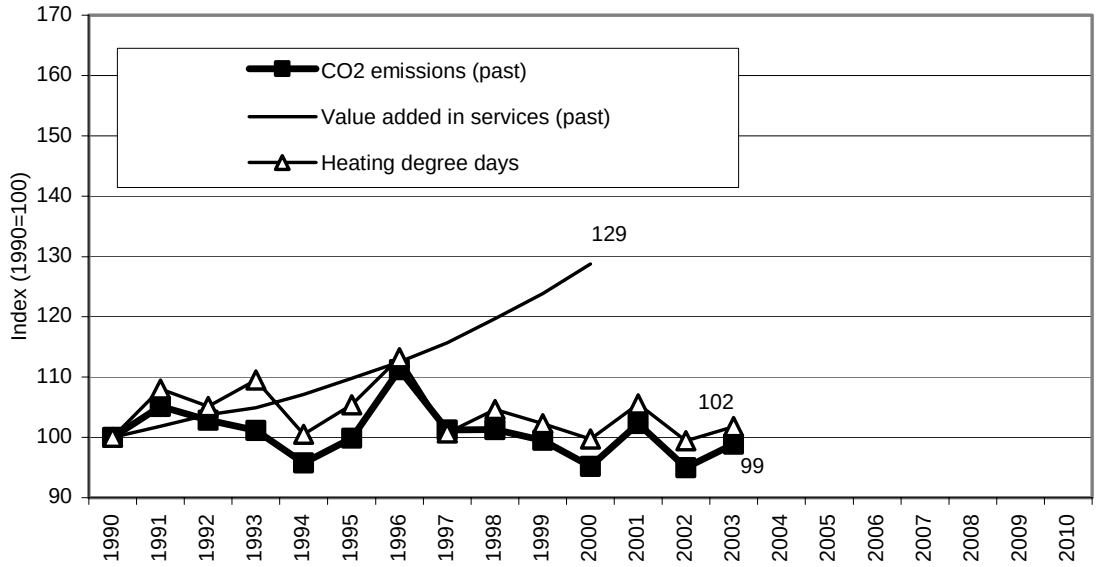
EU-15: CO2 emissions from transport, passenger and freight kilometers



Source: EEA ETC-ACC

European Environment Agency

EU-15: CO2 emissions from services, degree days and value added



Source: EEA ETC-ACC

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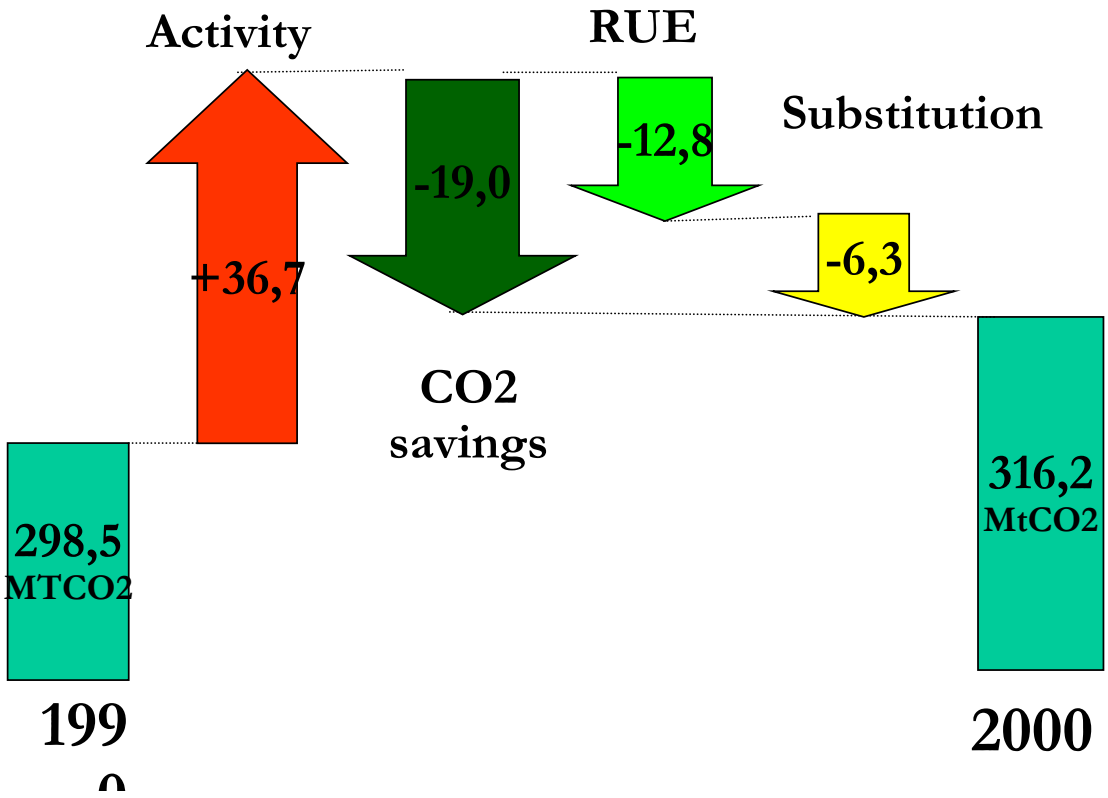
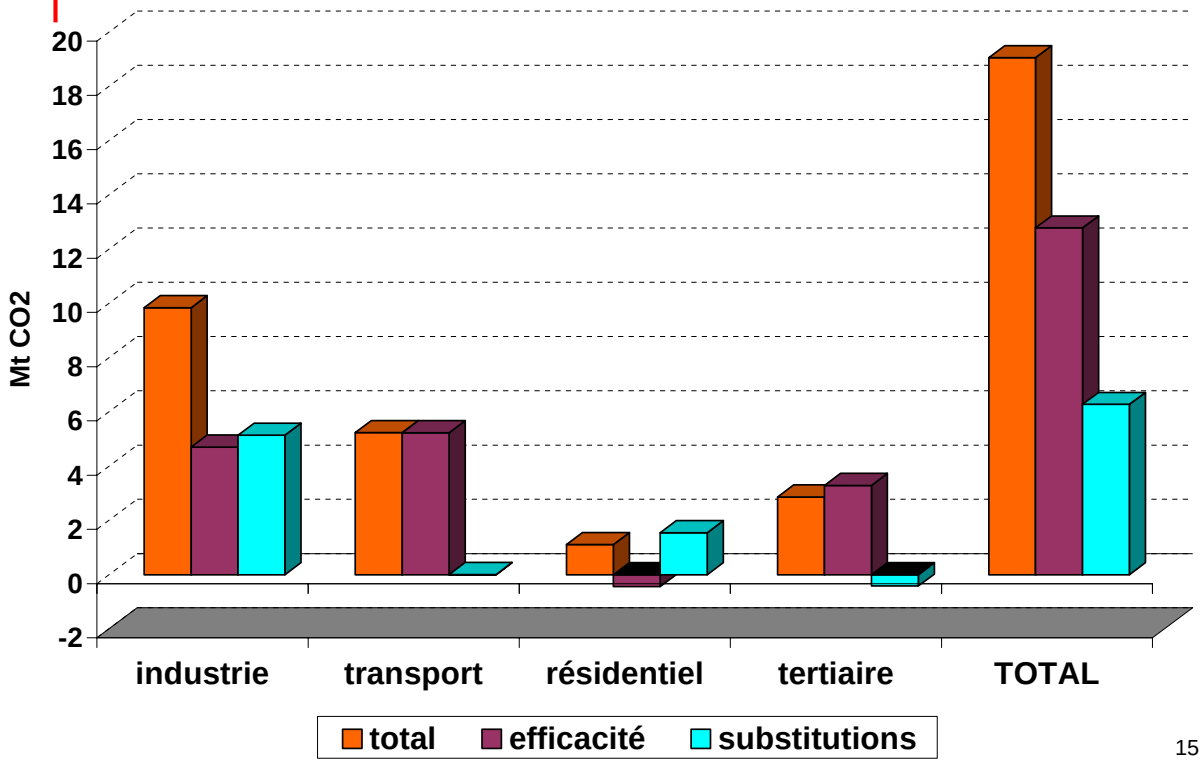
Overall CO2 savings in France: 6% compared to 1990; only compensate half of the activity impact on CO2



Sectoral contribution of CO2 savings in France
1990-2000



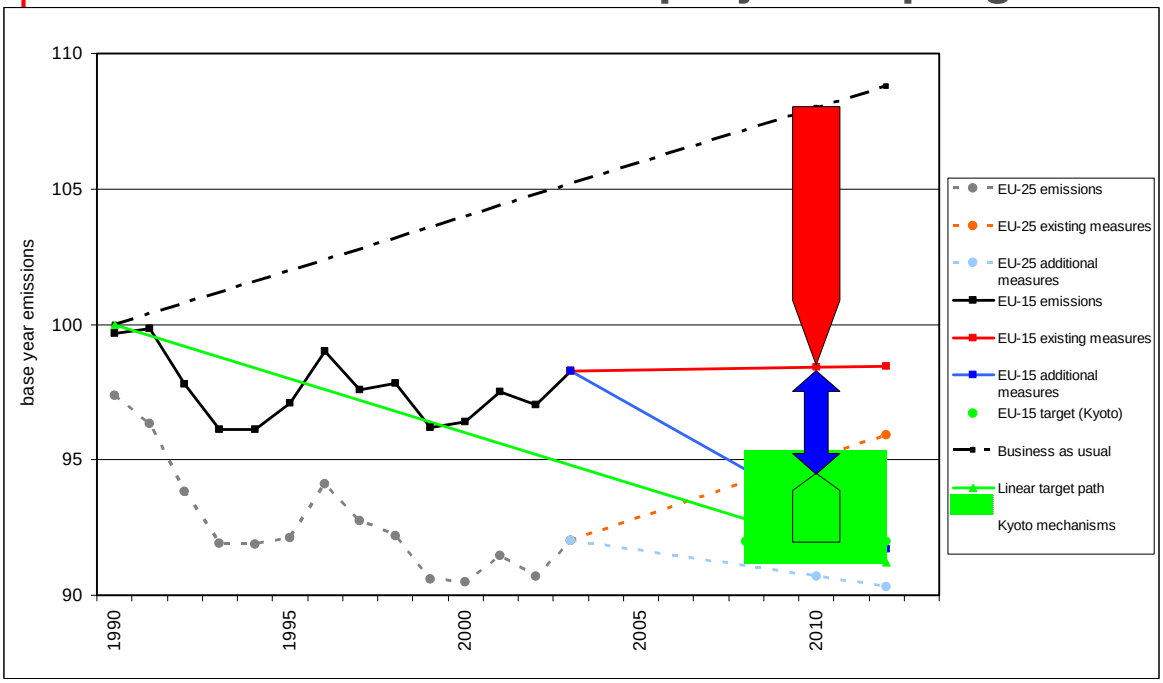
Direct versus indirect emissions

- CO2 emissions correspond to on site inventories on site
- If a consumer replace fossil fuels with electricity, it will reduce its emissions even if this will increase emissions at power production level
- To measure the impact of consumers actions on total CO2 emissions, calculation of total emissions = direct +indirect (ie at the level of power plants)
- For this calculation, use the average emission factor of electricity production in the country : average 60 to 70 g CO2 per kWh in France and 350 g CO2 per kWh for the EU-15

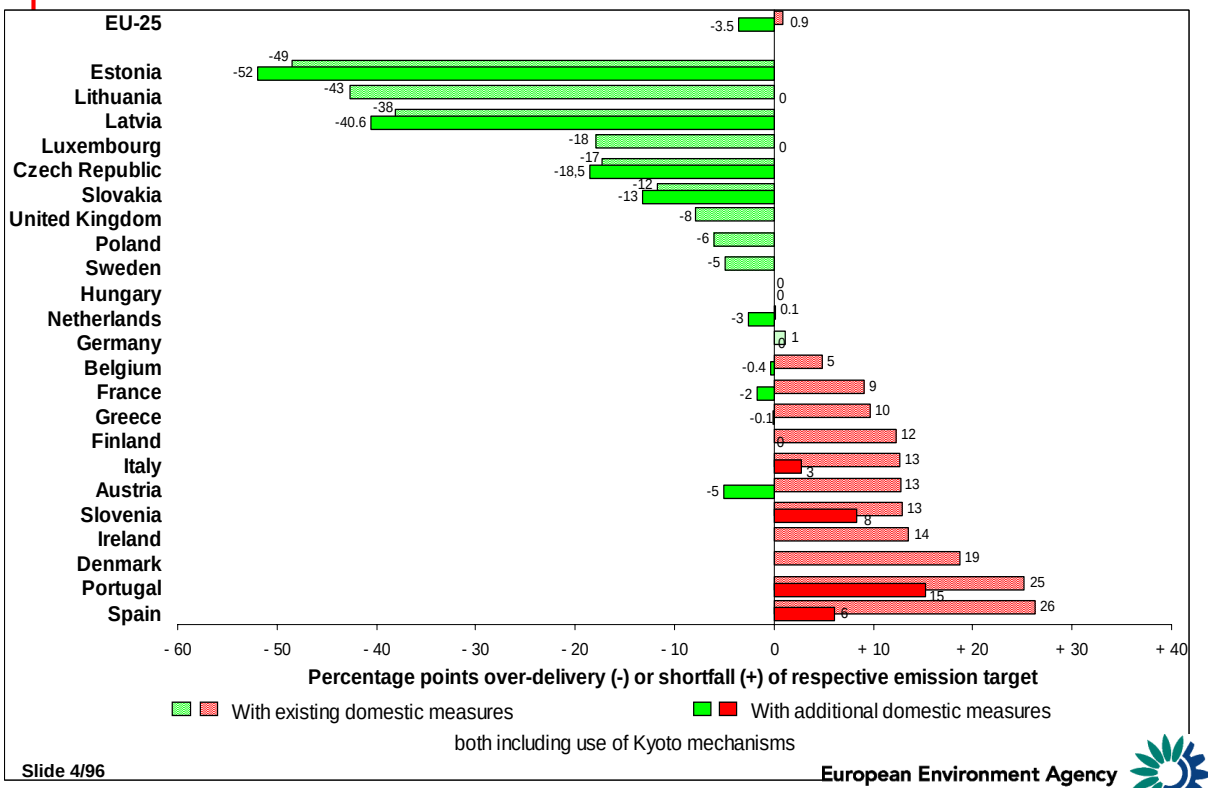
Direct versus indirect emissions(cont'd)

- More refined calculation can be made taking into, account the load curve and the type of power plants that supply each sector/end-use
- For instance in France, ADEME and EDF have agreed on the following coefficients variable according to the end-uses for households (g CO2 per kWh):
  - Heating: 180
  - Lighting:100
  - Intermittent uses : 60
  - Base uses (hot water, refrigerators…): 40,

Implementation challenge ahead: The EU's projected progress



Implementation challenge ahead: How will Member States perform in 2010?



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