



# Energy Efficiency Profile : EU

May 2011

## Energy Efficiency Trends

### Overview

Energy efficiency improved by about 22% or 1.4% per year between 1990 and 2008 in the EU. All sectors participate to this improvements.

### Industry

Around 30% progress in energy efficiency in industry in the EU since 1990 (1.9%/year). Each branche except textile contributed to decrease the overall industrial efficiency index.

Since 1998, structural changes towards less energy-intensive branches now strengthen the influence of efficiency improvements on actual energy intensity in industry. However the impact of these structural changes is limited: they explained around 16% of the reduction in the industrial intensity since 1998.

### Households

Energy efficiency improved by around 1.2 % between 1990 and 2008 mainly due large electrical appliances (1.6%/year progress) and space heating (1.4%/year).

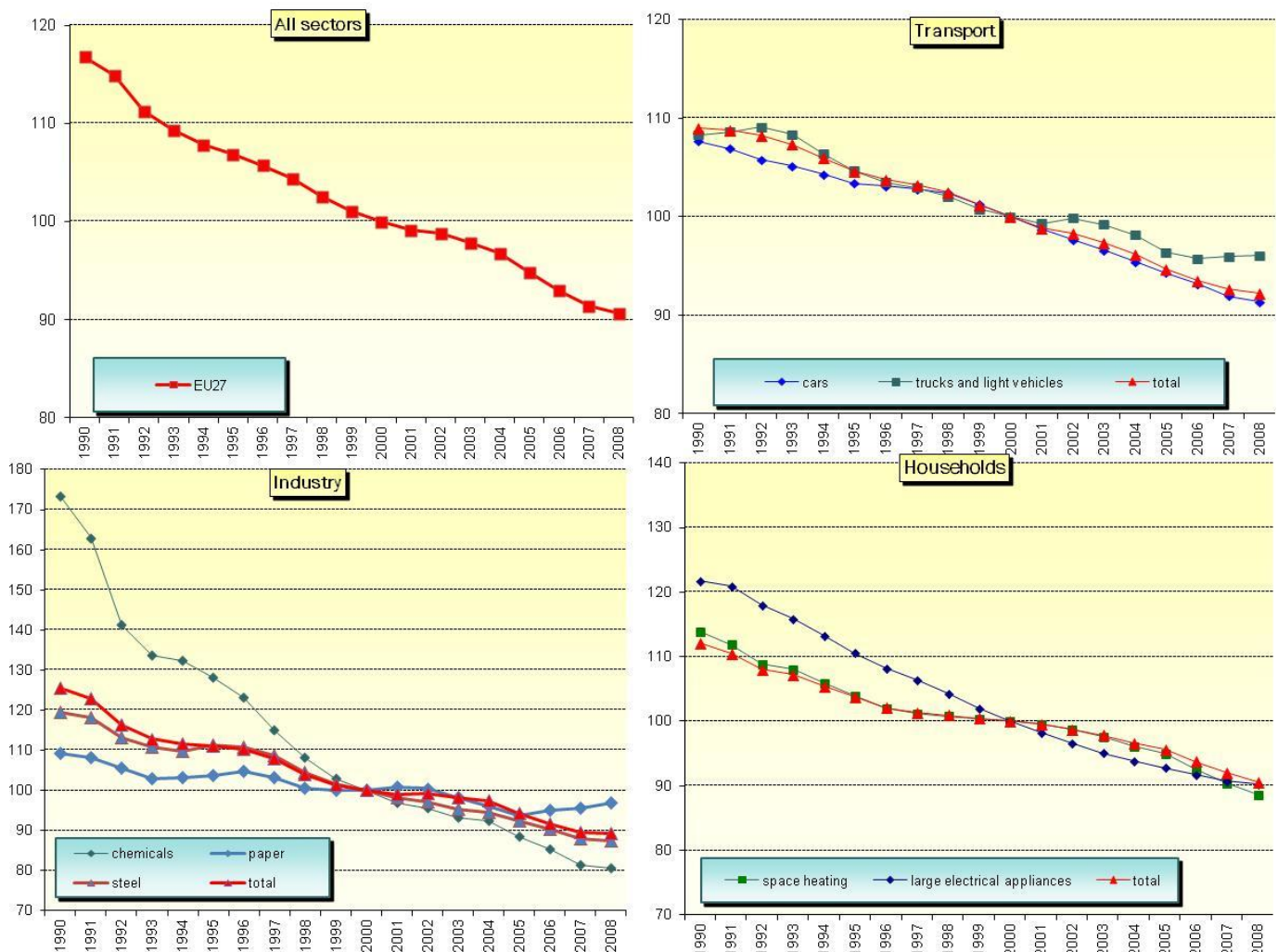
### Transport

Energy efficiency improved by 15% or 0.9% /year since 1990. Most improvement in energy efficiency are observed for air transport (around 30% improvement since 1990), for cars (15%), for trucks and light vehicles (11%).

The specific consumption of cars in litres per 100 km is regularly decreasing (-1%/year since 1990), with a more rapidly improvements for new cars since 1995 (-1.8%/year). However part of this gain is offset by a shift to larger cars.

For road goods transport, the energy consumption per ton-km has decreased regularly since 1993 because of a better management (increase in ton-km per vehicle except for 1998 to 2002).

Energy efficiency index (base 100=2000)\*



\*All indicators measured as a three-year moving average  
 Source ODYSSEE For more information : <http://www.odyssee-indicators.org/> (publications/sectoral profile)

## Energy Efficiency Policy measures

### Institutions, programmes and main cross-cutting energy efficiency measures in the EU

Since 2010 energy issues are represented with a Directorate General for Energy. In December 2008 the European Union agreed on an **Energy and Climate Change Package** plus a **Strategic Energy Review**. The most important initiatives relevant for energy efficiency since then include the **Effort Sharing Decision 406/2009/EC** (2009), the **EU-Energy Strategy 2020** (November 2010), the **Energy Efficiency Plan 2011** reemphasizing the 20% energy efficiency target, as well as the **Low Carbon Roadmap 2050** (both March 2011). Pending is an **Energy Roadmap** later in 2011 as well as a **recast of the Energy Service Directive**, which will provide a legal basis for a 20% primary energy target and may open the possibility to make it binding after 2013 if Member States are not on track.

The **Recast of the Eco-design Directive 2009/125/EC** creates a framework across all sectors for an ecologic design of products that are related to energy ("ErP"). It replaces directive 2005/32/EC, known as "Energy-using Products" (EuP). "ErP" and "EuP" provides the basis for several implementing regulations: 12 implementing regulations are in place (plus a pending one on room air conditioners), 39 in preparation for EuP, plus additional ones on ErP (e.g. windows, insulation material). Voluntary agreements are discussed for complex set-top boxes, imaging equipment, machine tools, medical imaging. The **revised Labelling Directive 2010/30/EU** extends the scope from household to the commercial and industrial sectors. The Directive introduces new efficiency classes A+, A++ and A+++ on top of the existing A grade (to be reviewed in 2014) (total number of classes still limited to 7). Energy labeling has contributed to energy savings of about 3 Mtoe/year over 1996-2004.

### Industry

The main measure relevant for energy efficiency is the **European Emissions Trading Scheme (EU ETS)**. The system is approaching the end of the second phase 2008-2012, in which allowances were given for free. The revised EU ETS accepted in December 2008 will apply over 2013-2020 should lead to a reduction in GHG emissions of 21% compared to 2005 levels. The quantity of allowances issued each year will decrease in a linear fashion to reduce gradually the overall level of emissions each year. The industry sector will be, at least partially and for a transition period, exempted from auctioning and certificates will be allocated based on benchmarks that have been published in December 2010. To limit carbon leakage, 100% free allocation will be kept up to the benchmark by 2020. According to the Eco-design Directive, the efficiency of electric motors must at least correspond to efficiency class IE2. The expected recast of the Energy Efficiency Directive may contain measures directed to mandatory or voluntary energy audits and subsidies and will also substantially revise the CHP Directive from 2004.

### Households, Services

The recast of the Energy Performance of Buildings Directive (Directive 2010/31/EU) introduced the following novelties: new buildings will have to consume 'nearly zero' energy and use 'to a very large extent' renewables in 2020; public authorities that own or occupy a new building should set an example by building, buying or renting 'nearly zero energy building' by 2018; Member States shall develop measures to stimulate the refurbishment of buildings into very low energy buildings; the 1000 m<sup>2</sup> threshold for major renovation has been deleted (to be effective in 2014); minimum requirements for components are introduced for all replacements and renovations; a harmonised calculation methodology to push-up MS minimum energy performance requirements towards a cost-optimal level; a more detailed and rigorous procedure for issuing energy performance certificates with mandatory controls required to check their correctness; introduction of penalties for non-compliance. The impact assessment for the recast EPBD estimates the energy savings at 60 – 80 Mtoe/year energy savings by 2020, i.e. a reduction of 5-6% of the EU final energy consumption in 2020.

### Transport

The main EU initiative is mandatory CO<sub>2</sub> standards as voluntary agreements on performance have failed to reach their target. The new regulation set an average target of 130g CO<sub>2</sub>/km for new passenger cars in 2015. A long term target is introduced for 2020 at 95 g CO<sub>2</sub>/km. Manufacturers will be given interim targets (65% of their fleets in 2012, to 80% in 2014). In case they exceed the targets, they will have to pay fines. In February 2011 the European Parliament adopted a legislation on CO<sub>2</sub> emissions of new light commercial vehicles (LCV) with a target of an average CO<sub>2</sub> emission of 175 g/km by 2017 (for category N1, i.e. below 3.5 t gross weight) (~185 g/km in 2009) and 147 g/km in 2020. Air traffic has been included in the EU ETS from 2012, emissions for all flights that arrive at or depart from an EU airport. A similar measure for international marine traffic is under discussion. Regulation (EC) No 1222/2009 introduced a labelling scheme for tyres.

## Selected Energy Efficiency Measures

Sectors	Title of Measure	Since	Energy (Mtoe)	CO <sub>2</sub> (Mt)
All	Recast Eco-Design Directive 2009/125/EC (phase-out of incandescent light bulbs; stand-by power; tertiary sector lighting; set-top boxes....)	2009	376 TWh for the 12 first measures in 2020 (36% motors, 10% lighting, 10% tertiary lighting, 11% TV, 9% standby, 9% fans)	150 Mt of CO <sub>2</sub> in 2020
All	Revised Labelling Directive 2010/30/EU	2010	27 Mtoe by 2020	80 Mt in 2020
All	Energy Service Directive 2006/32/EC	2006	9% of final energy excl. emission trading in 2016 (89 Mtoe with "Early Action")	270 Mt of CO <sub>2</sub> in 2016 (incl. Early Action)
Households	Recast of the Directive on energy performance of buildings	2010	60 – 80 Mtoe/year by 2020	160- 210 Mt/yr in 2020
Transport	Tyre labelling Regulation (EC) No 1222/2009	2009	1.5 Mtoe in 2020	4.5 Mt of CO <sub>2</sub> in 2020
Transport	Emissions of new cars (130 g CO <sub>2</sub> /km in 2015)	2008	Potentially very large impact	
Transport	Inclusion of aviation in EU ETS	2012	59 Mtoe in 2020 (based on CO <sub>2</sub> emissions)	183 Mt of CO <sub>2</sub> in 2020
Industry	EU emission trading scheme	2005	Limited impact due to overallocation	
Industry	Minimum standards for electric motors	2011	135 TWh (incl.above in Eco-design Directive)	54 Mt of CO <sub>2</sub>
Tertiary	Minimum standards for commercial lighting	2008	35 TWh (incl.above in Eco-design Directive)	14 Mt of CO <sub>2</sub>