

# Sustainable development in the European Union

2009 monitoring report  
of the EU sustainable development strategy



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**2009 monitoring report  
of the EU sustainable development strategy**

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## Foreword

Sustainable development is a great challenge for our societies; it is a primary goal of the EU, enshrined in its treaties since 1997. The EU sustainable development strategy brings together the many strands of economic, social and environmental policy under one overarching objective - to continually improve the quality of life and well-being on Earth for present and future generations. At this point in time, when the world is facing a financial crisis and a global recession, as well as a food crisis, a looming energy crisis, and climate change, it is more than ever important to have a coherent and long-term vision for our future development.

Impartial and objective statistical information is essential for all decision-making and provides transparency and openness. Official statistics play a fundamental role in today's society and are essential for the development, implementation, monitoring and evaluation of EU policies. Eurostat and the European Statistical System have a leading role to play in providing data and monitoring to what extent the EU is on track to achieving the concrete goals for a sustainable development set out in the strategy. The main visible outcome is a bi-annual Monitoring Report which underpins the Commission communication to the Council and the European Parliament.



A handwritten signature in blue ink, which appears to read 'W. Radermacher'.

Walter Radermacher  
Director-General, Eurostat



## Abstract

The Eurostat monitoring report, based on the EU set of sustainable development indicators, provides an objective, statistical picture of progress towards the goals and objectives of the EU sustainable development strategy. It is published every two years and underpins the European Commission's progress report on the implementation of the strategy.

The statistics covered illustrate the range of issues relevant for sustainable development, and will contribute to raising awareness of the opportunities and challenges lying ahead. Quantitative rules applied consistently across indicators, and visualised through weather symbols, provide a relative assessment of whether Europe is moving in the right direction, and at a sufficient pace, given the objectives and targets defined in the strategy. The data presented cover the period from 1990 to 2007/8 (or the latest year available).

Sustainable development is a fundamental and overarching objective of the European Union, enshrined in the Treaty. The EU sustainable development strategy, launched by the European Council in Gothenburg in 2001 and renewed in June 2006, aims for the continuous improvement of quality of life for current and future generations.



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## Executive summary

Sustainable development is a fundamental and overarching objective of the European Union, aiming to continuously improve the quality of life and well-being for present and future generations, by linking economic development, protection of the environment and social justice.

The 2006 EU Sustainable Development Strategy (EU SDS) sets out a single, coherent strategy on how the EU will more effectively meet the challenges of sustainable development. It reaffirms the overall aim of achieving a continuous improvement in the quality of life of citizens through sustainable communities that manage and use resources efficiently and tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion.

Measuring progress towards sustainable development is an integral part of the EU SDS, and it is Eurostat's task to produce a monitoring report every two years based on the EU set of sustainable development indicators (EU SDIs). Eurostat has so far published two monitoring reports, in December 2005 and October 2007. This third report charts progress in the implementation of the strategy's objectives and key challenges.

The SDS defines objectives and targets intended to put the European Union on a path towards sustainable development. Given these objectives and targets, this report provides a relative assessment of whether the EU is moving in the right direction. The approach is essentially quantitative, focusing on the EU SDIs as of October 2008. It complements the policy analysis provided in the Commission's progress report on the implementation of the Sustainable Development Strategy <sup>(1)</sup>.

The current economic and financial crisis poses a number of difficulties for monitoring progress in the implementation of the EU SDS. The recent economic turmoil has the potential to produce dramatic changes in many of the domains covered by the SDI set presented here. But the disruptions have occurred too recently to allow a reliable assessment of their impact on the indicators. Evaluations of most of the indicators cover the period up to 2008 or

*The renewed EU SDS reaffirms the overall aim of improving the quality of life*

*Measuring progress based on the EU SDIs is an integral part of the strategy*

*The current economic and financial crisis is too recent to be reflected in the indicators*



before, so they reflect, at most, only the early indications of the impacts of the crisis. The 2011 edition of the monitoring report should be able to build on more complete data and analyse how the crisis has affected progress towards sustainable development in the EU.

### Progress towards sustainable development in the European Union

Of more than 100 indicators presented in this report, eleven have been identified as headline indicators. They are intended to give an overall picture of whether the EU has achieved progress towards sustainable development in terms of the objectives and targets defined in the EU SDS. An evaluation of progress since 2000 based on these headline indicators shows a rather mixed picture.

SDI theme	Headline indicator	EU-27 evaluation of change
Socioeconomic development	Growth of GDP per capita	
Climate change and energy	Greenhouse gas emissions*	
	Consumption of renewables	
Sustainable transport	Energy consumption of transport relative to GDP	
Sustainable consumption and production	Resource productivity	
Natural resources	Abundance of common birds**	
	Conservation of fish stocks***	
Public health	Healthy life years****	
Social inclusion	Risk of poverty****	
Demographic changes	Employment rate of older workers	
Global partnership	Official development assistance*****	
Good governance	[No headline indicator]	:

\* EU-15    \*\* Based on 19 Member States    \*\*\* In North East Atlantic    \*\*\*\* EU-25, from 2005    \*\*\*\*\* From 2005

**LEGEND:**

- clearly favourable change/on target path
- no or moderately favourable change/close to target path
- moderately unfavourable change/far from target path
- clearly unfavourable change/moving away from target path
- :

NB: The evaluation principles used in this publication are described in detail in Box 0.2 in the introduction chapter.



### *Clearly favourable changes*

Recent developments can be considered as favourable for the two headline indicators related to 'socioeconomic development' and 'sustainable consumption and production'. Between 2000 and 2008, **GDP per capita** in the EU-27 grew by 1.8 % per year on average, with increasing growth rates during the economic upturn from 2003 to 2007. This favourable development led to an increase in **resource productivity**, which is the headline indicator of the 'sustainable consumption and production' theme. With resource use (in terms of domestic material consumption) growing at a slower annual rate than GDP, EU-27 resource productivity significantly increased by 1.1 % per year on average between 2000 and 2005.

*Changes since 2000 are clearly favourable for 'GDP per capita' and 'resource productivity'*

### *No or moderately favourable changes*

Moderately favourable changes can be observed for the headline indicators related to 'sustainable transport', 'public health' and 'demographic changes'. Changes were not significant for the headline indicator relating to 'social inclusion' and for one of the two 'natural resources' headline indicators.

*Moderately favourable changes for 'energy consumption of transport', 'healthy life years' and 'employment rate of older workers'*

Concerning 'sustainable transport', the headline indicator **energy consumption of transport in relation to GDP growth** shows only slight signs of the relative decoupling of transport energy demand from economic growth. Between 2000 and 2007, the energy consumption of transport in the EU-27 increased by 1.5 % per year on average. The moderately favourable evaluation is a result of the even higher GDP growth rates of 2.1 % per year over the same period, which outstripped the increases in energy consumption.

Concerning 'public health', data on life expectancy and **healthy life years** in the EU-25 indicate some progress in healthier and longer lives for EU citizens. A child of either sex born in 2006 would be expected to live, on average, 62 years free of disability.

Changes in the **employment rate of older workers** in the EU-27 over the period 2000 to 2008 reflect moderate progress towards the target that at least half of older workers should be in employment by 2010. This positive trend indicates an increased participation of older people in the labour market and a reduction in demand for pensions expenditure.

Addressing the issue of 'social inclusion', the headline indicator **risk of poverty** shows that there has been no change in the overall number of people at risk of poverty in the EU-25 since 2005. In 2007, one-sixth of the inhabitants in the EU-25 lived under the poverty risk threshold, defined as 60 % of their country's median equivalised disposable income. Single households, children and elder people are at particular risk of poverty.

*Both the 'risk of poverty' rate and figures on the 'abundance of common birds' remained broadly stable*

Data on the **abundance of common birds**, one of the headline indicators of the 'natural resources' theme, show that the index for all common birds has remained relatively stable, although the number of farmland birds declined unfavourably between 2000 and 2006. This indicates that the EU is still not on track to halting the loss of biodiversity by 2010.

### *Moderately unfavourable changes*

Changes are moderately unfavourable for the two headline indicators related to 'climate change and energy'. EU-15 **emissions of greenhouse gases** in 2007 stood only at 5 % below their Kyoto base year value, remaining significantly above the 8 % reduction required by Kyoto between 2008 and 2012. However, taking into account the significant emission reductions achieved since 2004, recent projections compiled by the European Environment Agency indicate that the Kyoto Protocol targets should be reached. These calculations are based on the additional

*Moderately unfavourable changes for both headline indicators of climate change and energy*





policies and measures already planned by Member States, including the use of carbon sinks and so-called Kyoto flexible mechanisms as well as the EU Emissions Trading Scheme. Despite increases in the **consumption of renewable energies** in the EU-27 over the period 2000 to 2007, their share in inland energy consumption has not grown sufficiently to be on the target path.

 **Clearly unfavourable changes**

Changes are clearly unfavourable for the second headline indicator of the 'natural resources' theme, as well as for the headline indicator related to 'global partnership'.

*Trends in the conservation of fish stocks and the EU's official development assistance are clearly unfavourable*

Following slight improvements in the **conservation of fish stocks** between 2003 and 2005, total fish catches outside safe biological limits increased up to 21 % in 2006. Overall, fish catches in all categories far exceeded sustainable levels of exploitation.

As regards the EU's international commitments, the share of Gross National Income (GNI) spent by the EU-27 on **official development assistance** to developing countries decreased between 2005 and 2008 to 0.4 % of GNI, thus moving away from the intermediate target of 0.56 % set for 2010. However, it should be noted that many of the other indicators of the global partnership theme display more favourable trends.

**: No headline indicator**

The 'good governance' theme contains no headline indicator as no indicator was judged to be sufficiently robust and policy-relevant to provide a comprehensive overview of the good governance concept.

## Detailed overview of main changes












While the headline indicators provide a snapshot of progress across the key challenges of the EU SDS, for a more complete and nuanced picture it is necessary to look theme by theme at the progress shown by the indicators.

## Socioeconomic development

Overall, most trends were positive over the period 2000 to 2007 in the socioeconomic development theme. However, the picture is mixed and some areas showed slow, or even no progress. Economic growth continued throughout the period, while regional disparities grew and households were saving less. Most of the employment indicators progressed in line with the Lisbon targets, but the overall employment rate was lacking in impetus. Labour productivity increased and energy intensity decreased in line with EU objectives. Much faster progress is needed in increasing the spending on research and development if the target is to be reached.

If it were possible to take the recent economic and financial crisis into account, however, the picture would be radically different. The latest data from 2008 and forecasts for 2009 foresee a sharp decline of economic growth. Even though the effects of the crisis are already visible they will only be reflected in statistics with some time lag.


**Table 1: Evaluation of changes in the socioeconomic development theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
 Growth of GDP per capita	Economic development	
	 Investment	 Regional disparities in GDP*
		 Household saving
	Innovation, competitiveness and eco-efficiency	
	 Labour productivity growth**	 Research and development expenditure
		 Energy intensity
	Employment	
	 Employment	 Female employment
		 Regional disparities in employment
		 Unemployment

\* From 2001

\*\* From 2003

## Headline indicator

Between 2000 and 2008, GDP per capita grew by 1.8 % per year on average. During the economic upswing from 2003 to 2007 growth rates rose to 2.7 % and were far higher in some central and eastern European countries. However, due to the economic crisis, growth of GDP per capita fell to 0.4 % in 2008. It is estimated to drop to -4.2 % in 2009. Although forecasts are based on many uncertainties, these projections from Directorate-General for Economic and Financial Affairs are supported by short-term quarterly data.

*As a result of the economic crisis, GDP per capita only grew by 0.4 % in 2008*

## Economic development

Over the period 2000 to 2007 total investments as a share of GDP increased moderately, peaking at 21.3 % of GDP in 2007 primarily due to growing levels of business investment. Regional disparities of economic prosperity remain a challenge for the EU and are still rising in most Member States. The household saving rate in the EU-27 showed a relative peak in 2001 followed by a steady decrease until 2007 and then a substantial increase in 2008 to the average level of 11.3 %.

*Growing regional differences in GDP*

## Innovation, competitiveness and eco-efficiency

Labour productivity grew over the years 2001 to 2007 but the growth rate has fallen since a peak in 2003. In addition, the energy intensity of the economy decreased significantly between 2000 and 2007, exceeding the target of a 1 % annual reduction in energy intensity. Total R&D expenditure, however, remained fairly stable at around 1.8 % of GDP, thus staying far from the target of 3 % by 2010.

*Enlargement has stimulated labour productivity*



## Employment

### Slow growth in employment

Except for a short cutback in 2002, the employment rate continuously increased over the last decade. However, the annual average growth in employment would need to considerably speed up to reach the EU target of 70 % in 2010 set by the Lisbon Strategy.

### Regional differences in employment have fallen

By contrast, over the last two years female employment has exceeded interim values on the path towards achieving the target of 60 % female employment by 2010. Dispersion of regional employment rates improved between 2003 and 2007, reaching an all-time low of 11.1 %. In line with the economic cycle, albeit with a slight time lag, overall EU unemployment decreased between 2004 and 2008 from 9 % to 7 %.

## Climate change and energy

Overall progress since 2000 in the ‘climate change and energy’ theme has been unfavourable, even if there are recent signs of improvement in several indicators.

Following a period of growth in EU-15 greenhouse gas emissions between 2000 and 2004, recent developments have been favourable, and emissions in 2007 stood 1.4 % lower than in 2000. Projections indicate that the Kyoto Protocol targets are within reach. The greenhouse gas intensity of energy consumption has decreased, but at a modest pace.

Of the energy indicators, only combined heat and power has shown a favourable development. The consumption of renewables and biofuels as well as the share of renewables in electricity generation have increased but each at a pace which appears insufficient to reach their respective targets. Energy dependency has grown considerably since 2000, reaching about 55 % in 2008. The implicit tax rate on energy has fallen, which is inconsistent with the objective of shifting the tax burden from labour to resource use.

**Table 2: Evaluation of changes in the climate change and energy theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
Greenhouse gas emissions*	: Greenhouse gas emissions by sector	Greenhouse gas intensity of energy consumption
		: Global surface average temperature
Consumption of renewables	Energy dependency	Gross inland energy consumption
		Electricity generation from renewables
		Consumption of biofuels in transport
		Combined heat and power**
		Implicit tax rate on energy

\* EU-15

\*\* From 2005



## Headline indicators

EU-15 greenhouse gas emissions in 2007 stood 5 % below their Kyoto base year value, remaining significantly above the 8 % reduction required by Kyoto between 2008 and 2012. Nevertheless since 2004, the evolution has been favourable, resulting in an overall decrease of 1.4 % for the EU-15 between 2000 and 2007. According to the projections compiled by the European Environment Agency the Kyoto target can be reached with existing policies and measures, including the use of carbon sinks. With additional policies and measures, and use of the so-called 'Kyoto mechanisms', the EU-15 is projected to overachieve its target.

Despite increases in the consumption of renewable energies in the EU-27 since 2000, their share in inland energy consumption has not grown sufficiently to be on the target path. Biomass is by far the most important renewable energy source, delivering almost 70 % of the total renewable energy in 2007 and having the fastest growing share. Hydro power, the second most important renewable energy source, has decreased its share over recent years. Wind and geothermal sources are still minor contributors, although in absolute terms are increasing rapidly.

*Progress in reducing EU-15 greenhouse gas emissions has been slow since 2000, but trends are projected to become favourable*

*Slow progress in the uptake of renewable sources*

## Climate change

EU-27 greenhouse gas emissions, for which there is no Kyoto target, were virtually the same in 2007 as in 2000. Following the considerable progress achieved in reducing greenhouse gas emissions by central and eastern European Member States during the 1990s, emissions rose in the first years of the decade but have fallen steadily since 2004, so that in 2007 EU-27 emissions were 12.5 % below their base year level.

Although emissions from most sectors decreased between 2000 and 2007, emissions from energy industries and transport, the two biggest emission sources, increased, thereby offsetting some of the reductions achieved elsewhere.

Even if emissions from the energy industry have increased, due to switching to lower carbon fuels the greenhouse gas intensity of energy consumption has decreased, albeit at a slower pace than in the 1990s.

The global surface average temperature was 0.7 °C higher in 2008 than 150 years ago, although there are indications that over the past decade the rate of global temperature rise has slowed down.

*EU-27 greenhouse gas emissions have fallen 12.5 % from their base year level*

*Growing energy industry and transport emissions*

*Modest decline in GHG intensity of energy consumption*

## Energy

EU-27 dependence on imported energy remained rather constant during the 1990s at around 45 %. Since 2000, the level of energy dependency has risen steeply, exceeding 50 % in 2004, and reaching around 55 % in 2008.

The EU's energy demand has slightly grown. Between 2000 and 2007 EU-27 energy consumption grew faster than in the previous decade, although since 2003 it has levelled off. There has been a general shift away from solid fuels towards natural gas and to some extent renewable energies.

Renewables continue to play a minor role in EU-27 electricity production and their share grew modestly from 13.8 % in 2000 to 15.6 % in 2007. The gap to the 21 % target set for 2010 remains substantial.

The share of biofuels in transport remains small but is growing rapidly. Their consumption has shown accelerated growth since 2000, and they represented 2.6 % of transport fuels in 2007 in EU-27. Although this share is still below the target path, if the recent rate of growth continues the target is attainable.

*EU is dependent on imports for more than half of its energy*

*Energy demand has slightly increased*

*Share of renewable electricity needs faster growth to reach target*

*The share of biofuels remains small but is rapidly growing*





**Modest progress in combined heat and power generation**

The development of cogeneration or combined heat and power (CHP), a technology which combines the production of useful heat with electricity generation, has been relatively slow. The EU-27 share in gross electricity generation increased only slightly, by 0.4 percentage points between 2004 and 2007. CHP delivered 10.9 % of gross electricity generation in 2007.

**Implicit tax rate has been declining**

The implicit tax rate on energy for the EU-27 has been decreasing since 1999. This decrease in the effective tax burden could be seen as inconsistent with the objective of shifting taxation from labour onto resource and energy consumption, although there are indications that taxation may have played a role in stimulating energy conservation. Furthermore there is greater reliance on policy instruments other than taxes, such as emissions trading, and energy taxes were reduced to compensate for the substantial rise in the oil price over recent years.

## Sustainable transport

Changes since 2000 concerning sustainable transport show a rather mixed picture. There is only minor progress in decoupling transport volumes and transport energy consumption from economic development. Changes in the modal split and transport volumes seem, in general, to be more favourable for passenger transport than for freight transport. Despite a short-lived increase in the share of investments in infrastructure for environmental friendly modes, such as rail and ports, during the early years of the decade, the pattern of expenditure has returned to favouring road. While road accident fatalities have been much reduced, faster progress will be needed to achieve the objective of halving road fatalities between 2000 and 2010. Although greenhouse gas emissions from transport have continued to increase at an unfavourable rate and CO<sub>2</sub> emissions from new passenger cars remain far from their target, emissions of ozone precursors and particulate matter decreased favourably.

**Table 3: Evaluation of changes in the sustainable transport theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
Energy consumption of transport relative to GDP	<b>Transport and mobility</b>	
	Modal split of freight transport	Volume of freight transport relative to GDP
		Volume of passenger transport relative to GDP
	Modal split of passenger transport	Investment in transport infrastructure
		Passenger transport prices
	<b>Transport impacts</b>	
	Greenhouse gas emissions from transport	Average CO <sub>2</sub> emissions per km from new passenger cars*
		Emissions of ozone precursors from transport
	People killed in road accidents**	Emissions of particulate matter from transport

\* EU-25, from 2004    \*\* From 2001



## Headline indicator

Although economic growth has exceeded the growth of energy consumption by transport since 2000, the ratio of energy consumption per unit GDP showed only moderate decreases between 2000 and 2007. There are therefore modest signs of a relative decoupling of the energy consumption of transport from economic development.

*Energy demand of transport is growing slightly slower than GDP*

## Transport and mobility

Between 2000 and 2007, the share of road in inland freight transport in the EU-27 increased to more than 75 %, and as a consequence the shares of rail and inland waterway transport decreased slightly over the same period. The growth in freight transport, as measured in tonne-km, exceeded GDP growth in the EU-27 between 2004 and 2007. Freight transport therefore remains strongly coupled to economic development.

*Road continues to dominate freight transport, which is still growing faster than GDP, whereas relative decoupling is taking place in passenger transport*

Modal shares in inland passenger transport remained rather stable over the period 2000 to 2007, although a slight increase in the share of car transport (accounting for 83.4 % in 2007) was apparent. Rail transport remained constant at 7.1 %. As a consequence there were slight decreases in the share of bus and coach transport. Passenger transport volumes in the EU-27 are still growing, although below the rate of GDP, indicating that relative decoupling of transport volumes and GDP development for passenger transport is taking place.

The total energy consumption of transport grew significantly between 2000 and 2007. Aviation showed the highest increase of all transport modes, followed by road transport. In contrast, rail reduced its energy consumption, even though it increased its transport performance in passenger and freight transport.

*Energy consumption of aviation and road transport is still growing*

Total investment in transport infrastructure expressed in current prices grew considerably between 2000 and 2006. The share of road infrastructure investments fell from 60 % in 2000 to 53 % in 2003, but has since returned to its former level of about 60 % over the period 2005-6. Mirroring these developments, there was a short-lived but significant trend towards investments in infrastructure for modes such as rail and ports, which are apt to be more environmentally friendly than road. However, this favourable trend peaked in 2003, and the trend since then has been unfavourable.

*Smaller share of investment in infrastructure for environmentally friendly modes*

Between 2000 and 2008, prices for passenger transport by road, rail and air increased significantly, although at different rates. Overall, prices for road and rail transport have been increasing faster than those for air transport, the transport mode with the fastest growing energy consumption as well as comparatively high emissions of greenhouse gases.

*Prices for road and rail are growing faster than for air*

## Transport impacts

EU-27 total greenhouse gas emissions from transport (excluding international aviation and maritime transport) increased by 26 % between 1990 and 2007. Between 2000 and 2007 growth rates of transport greenhouse gas emissions in the EU-27 slowed down compared to the period 1990-2000. Road dominates with 94 % of total transport greenhouse gas emissions in 2007.

*EU-27 greenhouse gas emissions of transport are still growing but at a slower pace than transport energy consumption*

One of the reasons for the increase in greenhouse gas emissions are the CO<sub>2</sub> emissions of new passenger cars which remain significantly above the path necessary to reach EU targets.

In contrast to the continuously growing emissions of greenhouse gases, emissions of air pollutants, such as ozone precursors and particulate matter have been steadily declining since 1990 due to the progressive tightening of emission standards. In the case of ozone precursors the current level of emissions is less than half of those observed in 1990.

*New passenger cars still emit too much CO<sub>2</sub>*



**Improvements in road safety are not fast enough to be on target path**

There has been progress in reducing road accident fatalities within the EU-27, and they have fallen by 43 % between 1991 and 2007. Between 2000 and 2007 the decrease has accelerated even more. However, the number of fatalities in the EU-27 is lagging roughly 2 years behind the linear path to the EU road safety target of halving road fatalities between 2001 and 2010.

## Sustainable consumption and production

Overall, changes in sustainable consumption and production since 2000 show a rather mixed picture, with some progress being achieved in terms of decoupling environmental degradation from economic growth, particularly for the issues of waste and atmospheric emissions. Consumption patterns, mainly addressing issues of energy consumption, however, show clear unfavourable developments. Data on production patterns, mostly limited to EU-15, show favourable signs as regards the ecological dimension of corporate social responsibility and environment-friendly farming practices.

**Table 4: Evaluation of changes in the sustainable consumption and production theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
☀️ Resource productivity	Resource use and waste	
	☁️ Municipal waste	☁️ Domestic material consumption
		☀️ Recycled and composted municipal waste
		☀️ Atmospheric emissions
	Consumption patterns	
	⚡️ Electricity consumption of households	: Number of households
		: Household expenditure
		☁️ Final energy consumption
		⚡️ Car ownership
	Production patterns	
	☀️ Environmental management systems*	☀️ Eco-labels*
		☀️ Organic farming*
		☀️ Livestock density index

\* EU-15



## Headline indicator

Over the period from 2000 to 2005, high GDP growth rates offset the increases in domestic material consumption, resulting in significant increases of EU-27 resource productivity as well as in a relative decoupling of economic development from resource use.

*Relative decoupling of resource use from GDP*

## Resource use and waste

Domestic material consumption in the EU-27 increased moderately between 2000 and 2005, mainly due to notable increases in direct material input (domestic extraction plus imports). Over this period, the consumption of minerals and fossil fuels increased, whereas biomass consumption experienced ups and downs, but declined overall.

*Domestic material consumption increased moderately between 2000 and 2005*

Following a rise in municipal waste generated per capita in the EU-27 between 1995 and 2000, levels remained rather stable between 2000 and 2007. Developments in municipal waste treatment were favourable, with significant declines in the amount of waste disposed of through land filling and significant increases in recycling and composting.

*Changes since 2000 are favourable for waste treatment and atmospheric emissions*

Between 1990 and 2006, the EU-27 substantially reduced its emissions of acidifying substances, ozone precursors and particulate matter. This has resulted in a clear absolute decoupling from GDP growth, although the trend has slowed down since 2000.

## Consumption patterns

Between 2000 and 2006, EU-27 household expenditure increased steadily, although at a slower rate than over the period from 1995 to 2000. The strongest increases in absolute terms were in expenditure on entertainment and clothing, although spending on communications, a relatively minor item, grew fastest in percentage terms. In parallel, the number of households increased across the EU-27, reaching nearly 200 million in 2006.

Final energy consumption in the EU-27 continued to grow from 2000 to 2007 mostly due to increasing demand from transport. The electricity consumption of households continued to increase significantly, both before and after 2000. However, the most recent data show a levelling off around 2004-05 and consumption even fell slightly in 2007.

*Energy consumption has increased but a turning point may have been reached in 2007*

Between 2000 and 2006, the number of passenger cars per 1 000 inhabitants in the EU-27 was still on the rise, albeit at a slower pace compared to the period from 1990 and 2000.

*More and more cars on EU's roads*

## Production patterns

The number of organisations in the EU-15 having implemented a certified environmental management system according to the 'eco-management and audit scheme' rose between 2000 and 2007. In addition, the number of products and services awarded the EU eco-label showed a considerable increase over the same period; however, market shares remain low.

*Considerable increase of both eco-label awards and organisations with a certified environmental management system*

In the EU-15, the share of organic farming in total utilised agricultural area increased between 2000 and 2007. Between 2003 and 2007, the number of livestock units per hectare in EU-27 showed a favourable decline.

*Signs of agricultural de-intensification*





## Natural resources

Whilst there have been positive developments in the designation of protected areas and in water quality, the abundance and diversity of common birds, especially farmland birds, is lower than in the past, marine fish stocks are threatened, human activity continues to encroach on areas of semi-natural land, and degradation has continued in forest health.

**Table 5: Evaluation of changes in the natural resources theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
Abundance of common birds*	Protected areas***	: Deadwood on forest land
		<b>Freshwater resources</b>
Conservation of fish stocks**	: Water abstraction	Water quality in rivers****
	<b>Marine ecosystems</b>	
		: Fishing capacity
	<b>Land use</b>	
	Change in land cover*****	Forest trees damaged by defoliation

\* Based on 19 member States    \*\* In North East Atlantic    \*\*\* EU-15, from 2003    \*\*\*\* Based on 18 Member States  
\*\*\*\*\* Based on 25 Member States, from 1990 to 2000

### Headline indicators

*Biodiversity still under pressure as examples for farmland birds and fish stocks*

The abundance and diversity of common birds has declined since 1990. While the index for all common birds has been rather stable since 2000, the farmland bird index has continued to decline albeit less steeply than over the previous decade. However, there was a further drop in 2006.

Total fish catches taken from stocks outside their safe biological limits sharply increased up to 21 % in 2006. Currently, fish catches in all categories by far exceed a sustainable degree of exploitation.

### Biodiversity

*Protected areas are moving towards sufficiency*

In 2007 areas designated for nature conservation in the EU-15 reached 96 % of that considered to provide sufficient habitats to safeguard biodiversity, as result of a steady growth over the previous years. Although there are differences in the level of implementation in those Member States that have most recently joined the EU, in 2008, the median value of all 27 Member States was 91 %.

The amount of deadwood in forests, which provides an important habitat and source of food for a wide range of species, improved slightly between 2000 and 2005. However, the overall amounts remain low.

*Freshwater resources are in good condition and have been used in a sustainable way*

### Freshwater resources

In those countries for which data are available, water abstraction remains at a sustainable level, most countries having reduced their abstraction rates.



A decrease in the biochemical oxygen demand (BOD) in surface waters reflects improvements in the water quality of rivers. The average BOD value indicates that, on average, rivers are only moderately polluted and could reach a relatively clean state if the trend continues.

### Marine ecosystems

The EU-15 fishing fleet, as measured by the total engine power of vessels, has been continuously reduced, with the aim of matching fishing capacity with available stocks. However, at the same time, technology has improved so that overall fishing capacity has not fallen.

*Although the fishing fleet is decreasing, fishing capacity has not decreased*

### Land use

There has been a continuous consumption of natural areas for different land uses. The main increases have been to the urban fabric as well as industrial, commercial and transport units. While the latter is the most dynamic sector, showing the highest relative increase, urban fabric poses the main pressure in absolute terms.

*No significant improvement in prevention of forest degradation*

Defoliation in the EU-27 remained at a ‘warning stage’ from 1993 to 2006. Despite recent improvement, defoliation showed an increase from 2000 to 2006. Therefore, the aim to improve the prevention of forest degradation as stated in the United Nations Global Objectives on Forests, to which the EU SDS refers, has not been reached.

## Public health

The developments in the public health theme present a rather inconsistent picture. On the one hand, the headline indicator shows that people are not only living longer, but also living longer in good health. Improvements are also visible in reductions in deaths due to chronic diseases, suicides, annoyance by noise, and serious accidents at work. On the other hand, data clearly show that there remain challenges ahead related to the environmental determinants of health. Since 2000 people in the EU have been more exposed to ozone as well as to particulate matter. Nevertheless, the production of toxic chemicals, which has long been on an unfavourable path, has recently started to develop in a more favourable direction.

**Table 6: Evaluation of changes in the public health theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
Healthy life years*	Health and health inequalities	
	Deaths due to chronic diseases	Suicides : Unmet needs for healthcare
	Determinants of health	
	Production of toxic chemicals**	Exposure to air pollution by particulate matter
		Exposure to air pollution by ozone
		Annoyance by noise***
		Serious accidents at work

\* EU-25, from 2005s

\*\* EU-25, from 2004

\*\*\* From 2005



## Headline indicator

*People in the EU are living longer and healthier and the gap between men and women is narrowing*

Data for life expectancy and healthy life years (i.e. years without any serious health problems) in the EU indicate that there has been progress in promoting a healthier and longer life for EU citizens. While life expectancy at birth for men and women grew at an annual average rate of 0.4 % and 0.3 % respectively between 2002 and 2006, there has also been an increase of healthy life years at birth (0.2 % per year for females and 0.7 % for males) between 2005 and 2007. These differences between the sexes mean that men are catching up with women in terms of life expectancy as well as healthy life years.

## Health and health inequalities

*Fewer people die due to chronic diseases or suicide*

Improvements in health are apparent in the death rate due to chronic diseases which decreased by 1.9 % per year in the EU-27. Improvements in mental health, as reflected by suicides, are also observable, except for the middle aged. Since the year 2000, suicides in the EU-27 have been decreasing on average by 2.8 % annually among teenagers and by 4.8 % among people aged over 85 years.

*The cost of medical treatment is an obstacle to the poorest people in some Member States*

For the EU-25 as a whole the poorer members of society are less able to afford to meet their needs for healthcare than the better off.

## Determinants of health

*A shift towards lower toxicity in chemical production*

Production of toxic chemicals in the EU-25 has slightly decreased by 0.3 % per year on average over the period of 2004-2007. There has also been a favourable shift away from the production of the most toxic chemicals towards less harmful products.

Exposure to air pollution worsened between 2000 and 2007: exposure to particulate matter increasing by 1.6 %, and to ozone by 18.5 %. It is however not possible to discern clear trends as they have fluctuated nearly every year.

*Fewer people are annoyed by noise and the number of serious accidents at work has fallen*

The share of the population in the EU-27 declaring that they suffer from excessive noise favourably declined between the years 2005 and 2007. A longer time-series for the EU-15 shows that this indicator fluctuates considerably from year to year.

Efforts to improve health and safety in work places are showing progress in the EU-27. This improvement is essentially consistent with the target of a 25 % reduction of serious accidents at work over the period 2007 to 2012.



## Social inclusion

The trends observed in the social inclusion theme have been mixed. The overall risk of poverty has not changed in the EU-25 since 2005, but in the EU-27 its intensity has deepened and income inequalities have grown. While there have been favourable developments in reducing the share of people with low educational attainment or living in jobless households or affected by long-term unemployment, trends in the share of early school leavers and in the participation in lifelong learning were not on the target path. The share of working poor has not changed since 2005.

**Table 7: Evaluation of changes in the social inclusion theme (EU-27, from 2000)**

Level 1	Level 2	Level 3	
Risk of poverty*	<b>Monetary poverty and living conditions</b>		
		Intensity of poverty** Income inequalities**	
	<b>Access to labour market</b>		
	Jobless households	Working poor* Long-term unemployment : Gender pay gap	
		<b>Education</b>	
		Early school leavers	: Public expenditure on education Adults with low educational attainment Lifelong learning

\* EU-25, from 2005    \*\* From 2005

### Headline indicator

The proportion of people living at risk of poverty has remained constant since 2005. In 2007, one-sixth of EU-25 inhabitants lived below the poverty risk threshold, defined as 60 % of their country's median equivalised disposable income. Children, young people of 16-24 years old, the elderly and persons with low education as well as women are at a higher risk of poverty than the average. Single households are at a growing risk of poverty, with single parents bearing the highest risk of 34 %.

*No overall change in risk of poverty from 2005 to 2007, but higher risk for single households*

### Monetary poverty and living conditions

The intensity of poverty deepened from 2005 to 2007. The median income of people at risk of poverty sank from 22 % to 23 % below the poverty risk threshold. In addition, income inequality, measured as the ratio of the income earned in the top income quintile to the income earned in the bottom quintile, increased throughout the EU-27 over the same period. In 2007, the richest 20 % of the population earned five times as much as the poorest 20 %.

*Deepening poverty intensity and increasing income inequality*

### Access to the labour market

Between 2000 and 2007 the share of adults living in jobless households declined considerably. The share of children living in jobless households also fell, but to a lesser extent.

*Decrease in jobless households*



**No change in working poor**

The share of people who are at risk of poverty despite being employed has not changed since 2005 and remains at 8 %.

**Decrease in long-term unemployment**

Between 2000 and 2007 the share of economically active persons unemployed for more than one year has declined. The gender pay gap did not narrow between 2006 and 2007.

**Education**

**2010 target for early school leavers will be hard to reach**

Since 2000, spending on education as a proportion of GDP has moderately increased in EU-27 countries. Between 2000 and 2006, the EU-27 experienced a certain decline of the proportion of early school leavers. However, the decrease discontinued in 2007. Progress in this area seems too slow to reach the 2010 target of 10 %.

**Low educational attainment reduced in all age groups**

Between 2000 and 2007, there has been a decrease in low educational attainment for all age groups. Older people in general have the lowest educational level.

**Lifelong learning became more popular, but progress is not sufficient**

Lifelong learning has become more popular since 2000. Almost 10 % of adults have been participating in education and training in the four weeks immediately before being interviewed. Although this increase is encouraging, additional progress will be needed to meet the target of 12.5 % for 2010.

**Demographic changes**

The demographic changes observable in the European Union since 2000 show rather favourable developments as regards employment of older workers as well as for some of the indicators related to population size and age distribution. Changes are less favourable, or even unfavourable, for indicators monitoring the sustainability of public finances and the adequacy of income for older people, in particular for the aggregate replacement ratio, that is, the level of income of pensioners relative to their income before retirement, which fell below 50 % in 2007.

**Table 8: Evaluation of changes in the demographic changes theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
	<b>Demography</b>	
	Life expectancy at age 65 (men's)	Fertility rate* : Migration
	Life expectancy at age 65 (women's)*	: Elderly population compared to working-age population
	<b>Old-age income adequacy</b>	
Employment rate of older workers	Income level of over 65s compared to before**	Risk of poverty for over 65s***
	<b>Public finance sustainability</b>	
		Retirement age****
	Public debt	: Expenditure on care for the elderly
		: The impact of ageing on public expenditure

\* From 2002

\*\* EU-25, from 2002

\*\*\* From 2005

\*\*\*\* From 2001



## Headline indicator

Changes in the proportion of older workers in employment imply that the EU-27 target of having 50 % of the 55-64 year olds in employment might be reached in 2010. This trend indicates improvements in the participation of older people in the labour market, one of the objectives endorsed by the EU SDS, as well as a reduction in demand for pensions expenditure.

*The 2010 target for older workers in employment might be achieved*

## Demography

Data on the life expectancy at age 65 suggest that the length of life of men and women will continue to rise, leading to a growing older population, particularly in the very old group (80+). In addition, although there has been favourable progress on population renewal, fertility rates remain under the population replacement level implying that the size of the working age population will continue to shrink.

*The proportion of the older population will continue to rise*

Immigration into the EU outweighs emigration but has decreased over the period 2002 to 2008. The ratio of elderly people to the working age population rose and is projected to further increase. The indicator has gone from five people of working age for every person aged 65 years or older in 1990 to four in 2007, and it is estimated that it will drop to two by 2060. Rising old-age dependency ratios, combined with low average retirement ages, are key demographic factors generating strain on public finances.

*Old-age dependency ratios are projected to increase in the coming years*

## Old-age income adequacy

Indicators related to quality of life and adequacy of pensions for the elderly show a rather negative development in recent years. The income level of over-65s compared to their previous income shows unfavourable progress between 2005 and 2007. Further, data by country indicate no significant change in the level of income of older people in most Member States between 2005 and 2007. Strikingly, the positive decline of risk of poverty for over-65s in EU-15 in the 1990s reverted to an increase in the first seven years of this century.

*Indicators on quality of life and adequacy of pensions show no progress in recent years*

## Public finance sustainability

The positive progress towards the 60 % euro-zone reference level reflected in public debt over the period 2000 to 2007 shifted in 2008, possibly as a consequence of recent financial turmoil. In addition, two trends are likely to jeopardise progress on public finance sustainability over the period 2000 to 2007. First, despite the increase in the employment of older workers discussed above, the small increase in the exit age from the labour market indicates that the target of delaying the average age of retirement to 65 years by 2010 set in the Barcelona European Council in 2002 is far from being achieved. Second, expenditure on care for the elderly as a percentage of GDP steadily rose between 2000 and 2004. This indicator, however, decreased slightly between 2004 and 2006, resulting in lower pressure on public finances.

*Progress on public finance sustainability is likely to be affected by the current financial crisis*

Pressures on public finances in the EU result from both ageing populations and the structure of social protection systems. The impact of ageing on public expenditure is estimated by projected changes in public pensions expenditure and changes in projected theoretical income replacement ratio, which indicate the likely change in expenditure on and adequacy of pensions. The latest projections show that pensions expenditure will increase between 2007 and 2060, while at the same time there will be a decline in the level of income of the older people (measured by theoretical income replacement ratio) in the majority of Member States.
















## Global partnership

While the headline indicator on global partnership, the share of gross national income spent by the EU-27 on official development assistance to developing countries, has not been developing in line with the target path, other indicators display rather favourable trends, in particular as regards the globalisation of trade. In addition, the overall trend in financing for development (for which only EU-15 data are available) was positive.

**Table 9: Evaluation of changes in the global partnership theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
 Official development assistance*	Globalisation of trade	
	 Imports from developing countries	 Share of imports from least-developed countries
		 Subsidies for EU agriculture
	Financing for sustainable development**	
	 Financing for developing countries	 Share of foreign direct investment in low-income countries
		 Share of official development assistance for low income countries
		 Share of untied assistance
		 Assistance for social infrastructure and services
		 Assistance for debt relief
	Global resource management	
: CO <sub>2</sub> emissions per inhabitant	 Assistance for water supply and sanitation**	

\* From 2005

\*\* EU-15

### Headline indicator

**ODA in the EU-27 is not on target path**

The share of gross national income (GNI) spent on official development assistance (ODA) to developing countries decreased slightly between 2005 and 2008, thus falling below the target path to 0.56 % set for 2010 as well as to 0.7 % to be reached by 2015.

### Globalisation of trade

**Globalisation of trade increased**

Imports from developing countries constantly increased between 2000 and 2008, marking further globalisation of international trade. Imports from the least-developed countries progressed in line with the EU objective of increasing their share, but overall remain low.

**EU has reduced agricultural subsidies**

The EU has reduced its agricultural subsidies in line with its target to substantially reduce trade-distorting support measures. It has also complied with its commitments under the Agreement on Agriculture of the World Trade Organisation.



## Financing for sustainable development

The overall trend in financing for development, which includes ODA as well as private flows and non-ODA official flows to developing countries, was positive. Between 2000 and 2007, the total amount of financing for development directed to developing countries increased on average by 9 % per year. This was mainly due to an increase in foreign direct investment (FDI). However, the low-income countries' share of EU-15 FDI in developing countries has slightly decreased.

In contrast, significant progress has been made in the untying of aid, i.e. the provision of funding to developing countries without restrictions on the procurement of the associated goods and services.

Bilateral ODA dedicated to social infrastructure and services increased with an average annual growth rate of 10.2 % between 2000 and 2007. Over the same period, activities related to debt increased by 14.6 % annually on average. The overall trend between 2000 and 2007 has thus been positive with exceptionally high commitments in 2005 and 2006.

*Decrease in low-income countries' share of FDI*

*Favourable developments in untying aid*

*Commitments for social development and debt relief increased since 2000*

## Global resource management

The level of CO<sub>2</sub> emissions per inhabitant in the EU and developing countries is an indicator that assists in comparing resource use between the two country groups. This indicator shows a strong inequality of resource consumption between the EU and developing countries. The gap in emitting CO<sub>2</sub> is, however, narrowing mainly due to growing emissions from some developing countries.







The ODA directed at water supply and sanitation grew by 7.7 % per year on average between 2000 and 2007, and represented 4.2 % of total bilateral ODA in 2007.

*Large differences in resource use between the EU and developing countries, although the gap is narrowing*

## Good governance

The trends observed in the good governance theme since 2000 have been mixed. While there have been positive trends in e-government availability and usage as well as in the transposition of Community law, there have been negative trends in the number of new infringement cases brought before the European Court of Justice. Voter turnout in national parliamentary elections has fallen and is still lower for the EU Parliament. Moreover, the ratio of environmental to labour taxes has decreased and thus, a general shift towards a higher share of environmental taxes in total tax revenues has not been achieved.

**Table 10: Evaluation of changes in the good governance theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
	<b>Policy coherence and effectiveness</b>	
	 Infringement cases*	: Citizens' confidence in EU institutions
		 Transposition of Community law**
	<b>Openness and participation</b>	
	 Voter turnout	 E-government availability**
		 E-government usage***
	<b>Economic instruments</b>	
 Environmental taxes compared to labour taxes		

\* EU-25, from 2005

\*\* EU-25, from 2004

\*\*\* From 2005



## Headline indicator

The theme of 'good governance' contains no headline indicator as no indicator was judged sufficiently robust and policy-relevant to provide a comprehensive overview of the good governance concept.

## Policy coherence and effectiveness

*The European Parliament is the most trusted of the main EU institutions*

In 2008, slightly more than half of EU-27 citizens said that they trusted the European Parliament; making it the most trusted of the main EU institutions. Fewer citizens reported that they trusted the European Commission and the Council of the EU.

*The number of infringement cases has increased*

Between 2005 and 2008, the number of infringement cases in the EU-25 increased from 170 to 207. Three-quarters of all actions for failure of the Member States to fulfil their obligations in 2008 concerned just three policy areas: internal market; environment, health and consumer protection; justice and home affairs.

*EU-27 is right on target in the transposition of Community law*

In 2001, the European Council set the target of a 98.5 % transposition rate of Community law by national authorities. Between 2004 and 2008, the transposition rate in the EU-25 has increased, but was just below target in 2008. Nevertheless, several policy sectors have been below the EU target rate over the same period.

## Openness and participation

*Voter turnout has decreased in national elections and is lower in EU parliamentary elections*

Voter turnout in national parliamentary elections has decreased in the EU-27 between 2000 and 2008. Generally, there has been stronger participation in national elections than in EU parliamentary elections.

*E-government availability and usage have been increasing*

E-government availability of basic public services has been steadily increasing in the EU-25 over the period 2004 and 2007. E-government usage by individual citizens has also increased in the EU-27 between 2005 and 2008, although a decrease is observable from 2007 to 2008. Both the availability of online public services and e-government usage show differences between Member States.

## Economic instruments

*The ratio of environmental to labour taxes has decreased*

The ratio of environmental to labour taxes has decreased in the EU-27 between 2000 and 2007, reflecting a shift from environmental to labour taxes. Both the share of environmental taxes and the share of labour taxes have decreased in total tax revenues.

## Is the European Union on a sustainable development path?

The objective of this report is not to give an absolute evaluation of whether the EU is sustainable, as there is no political or scientific consensus on what this state of sustainability would be, or on the optimal levels for many of the indicators presented in this report.

The EU SDS highlights commonly agreed objectives and targets to put the European Union on what has been implicitly defined as a path to sustainable development. This report therefore provides a relative assessment of whether the EU is moving in the right direction given these objectives and targets. In doing so, the focus is on 'sustainable development' rather than 'sustainability' <sup>(2)</sup>.



The indicators presented in this report show a rather mixed picture. Policy areas where there have been favourable developments include sustainable consumption and production, in particular as regards production patterns, and global partnership (with the exception of the headline indicator on ODA). However, since the assessments are relative, a favourable evaluation does not necessarily mean that no further progress is necessary, but rather that these positive developments must be sustained to reach objectives and targets.

In other policy areas trends have been less favourable or negative, showing that the European Union is not yet on a pathway to sustainable development. This is particularly true for issues related to energy consumption, as shown by the unfavourable developments of the indicators in the themes on 'climate change and energy', 'sustainable consumption and production' and 'sustainable transport'. This also affects the EU's ability to meet its climate change objectives. Efforts to reduce pressure on biodiversity have been mainly unsuccessful so far, indicating that the EU is not on track to achieve the target of halting the loss of biodiversity by 2010.

It is also interesting to examine changes in the evaluation of trends compared to the 2007 Monitoring Report produced by Eurostat <sup>(3)</sup>, in particular as both reports in principle contain the same headline indicators. While in 2007 data for resource productivity and ODA were only available for the EU-15, this time the evaluation is based on EU-27 data. All other headline indicators are based on the same EU-aggregate as in 2007, but of course benefit from additional years of data becoming available.

Five of the headline indicators show similar results to the 2007 edition. Notably, slight improvements are visible for the two headline indicators related to 'climate change and energy'. This is mainly due to appreciable progress in the years 2006 and 2007, although the overall trend can still be considered as being moderately unfavourable. Developments have become unfavourable or less favourable as regards conservation of fish stocks, the employment rate of older workers and official development assistance (ODA). The most striking change was seen in ODA, which switched from 'clearly favourable' to 'clearly unfavourable'. This is because while the EU-15 ODA in 2006 exceeded the collective objective of 0.39 % of gross national income, the subsequent decline shifted the overall trend (now EU-27) away from the intermediate target of 0.56 % set for 2010.

Resource productivity has been improving since Eurostat's 2005 Monitoring Report <sup>(4)</sup>, although the development has not been straightforward: relative decoupling in the 2005 edition switched to absolute decoupling in 2007, and in the 2009 report the trend had switched back to relative decoupling <sup>(5)</sup>, because domestic material consumption had increased again.

Overall, and with the exception of the headline indicators related to 'climate change and energy', little progress seems to have been made since the 2007 Monitoring Report, confirming that more efforts are necessary in the European Union to get on the pathway to sustainable development.

*Slight improvements since the previous report in reducing greenhouse gas emissions and uptake of renewable energy*

*Most striking unfavourable development concerns official development assistance*

## End notes

<sup>(1)</sup> Commission communication, *Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development*. COM(2009) 400

<sup>(2)</sup> It is useful to differentiate the concept of sustainable development from the concept of sustainability. 'Sustainability' is a property of a system. The focus is on maintaining a particular state of the system through time. The concept of sustainable development refers to a process, and puts more emphasis on the idea of change or development. The strategy aims to 'achieve continuous improvement of quality of life', and the focus is therefore on sustaining the process of improving human well-being. Rather than seeking a stable equilibrium, sustainable development is a dynamic concept, recognising that changes are inherent to human societies.

<sup>(3)</sup> Eurostat, *Measuring progress towards a more sustainable Europe - 2007 monitoring report of the EU sustainable development strategy*, Luxembourg, Office for Official Publications of the European Union, 2007.

<sup>(4)</sup> Eurostat, *Measuring progress towards a more sustainable Europe - Sustainable development indicators for the European Union*. Luxembourg, Office for Official Publications of the European Union, 2005.

<sup>(5)</sup> At the level of national or even supranational economies a distinction is often made between 'absolute' and 'relative' decoupling: relative decoupling implying a reduced throughput or environmental pressure per unit of GDP (i.e. an increase in material productivity), and absolute decoupling indicating a declining throughput or environmental pressure over a growing GDP.





# Introduction

## *Sustainable development in the European Union*

Sustainable development has been defined as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’<sup>(1)</sup>. It is a fundamental and overarching objective of the European Union, enshrined in the Treaty<sup>(2)</sup>. By linking economic development, protection of the environment and social justice, it aims at the continuous improvement of the quality of life and well-being for present and future generations, and therefore concerns all citizens in the EU, as well as of the whole world.

Since the 1992 Rio Earth Summit, the EU has played a leading role in supporting the ideal of balanced and sustainable development. The 1998 Cardiff European Council<sup>(3)</sup> reaffirmed the commitment to integrate environmental concerns into other EU policies. Further steps were taken when the first EU Sustainable Development Strategy was adopted by the 2001 Gothenburg European Council<sup>(4)</sup>, followed by the European Commission’s White Paper on governance<sup>(5)</sup> and a communication on the EU’s contribution to global sustainable development<sup>(6)</sup>, which were adopted at the 2002 Barcelona European Council<sup>(7)</sup>. These steps laid the foundation for the EU contribution to the 2002 World Summit on Sustainable Development in Johannesburg.

## **The renewed EU Sustainable Development Strategy**

During 2004 and 2005 the EU Sustainable Development Strategy was reviewed<sup>(8)</sup> in preparation for the adoption of a renewed Strategy<sup>(9)</sup> in 2006, which reaffirmed the overall aim of achieving a continuous improvement in the quality of life, both for current and for future generations.

The renewed EU Sustainable Development Strategy (EU SDS) sets out a single, coherent strategy on how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development. The main body of the Strategy is built around seven key challenges, with corresponding operational objectives and targets as well as associated actions and measures. In addition, a number of key objectives and policy guiding principles serve as a basis for the Strategy.





### *Seven key challenges*

Recognising that the unsustainable trends described in the 2001 Strategy still persist, and that new challenges are arising, the renewed EU SDS identifies the following seven key challenges for the EU:

- climate change and clean energy,
- sustainable transport,
- sustainable consumption and production,
- conservation and management of natural resources,
- public health,
- social inclusion, demography and migration,
- global poverty and sustainable development challenges.

Each key challenge is described in terms of an overall objective, specific operational objectives and targets, and a list of actions to be pursued. The objectives and targets are described in the following ten chapters.

### *Key objectives and policy guiding principles*

The SDS is underpinned by the four key objectives and the ten policy guiding principles agreed by the June 2005 European Council <sup>(10)</sup>:

#### **Key objectives:**

- environmental protection,
- social equity and cohesion,
- economic prosperity,
- meeting our international responsibilities.

#### **Policy guiding principles:**

- promotion and protection of fundamental rights,
- solidarity within and between generations,
- open and democratic society,
- involvement of citizens,
- involvement of businesses and social partners,
- policy coherence and governance,
- policy integration,
- use best available knowledge,
- precautionary principle,
- make polluters pay.

These guiding principles correspond to the underlying values of a dynamic European model of society and serve as a basis for the EU SDS.

### *Cross-cutting policies and issues*

In addition to the seven key challenges, the renewed EU SDS highlights cross-cutting policies which contribute to the knowledge society, namely education and training, and research



and development. It advocates the use of economic instruments in implementing the Strategy, while calling for integrated financing mechanisms, and proposes actions towards communication, dissemination and stakeholder involvement.

### *The governance cycle*

The renewed EU SDS introduces a governance cycle whereby the December European Council will review progress and priorities every two years. The Commission is requested to support this review by submitting a progress report on the implementation of the SDS in the EU and the Member States, analysing both the present situation and proposing orientations and actions for the future. The Commission's progress report should also draw on the set of SDIs presented in the Eurostat monitoring report (the present publication), which is therefore to be updated every two years.

In its first stocktaking, the Commission published a progress report in October 2007 <sup>(11)</sup>, describing how far the EU had moved towards the seven core Strategy objectives and identifying policy initiatives at both EU and Member State level that had contributed to these results. The report reaffirmed that the Strategy's key challenges remained valid. As well as drawing heavily on the EU set of Sustainable Development Indicators (SDIs), an annex to the report described them in detail <sup>(12)</sup>.

### *Synergies between the EU SDS and the Lisbon Strategy for growth and jobs*

By addressing the overarching long-term goal of the EU, the EU SDS forms the overall framework within which the Lisbon Strategy <sup>(13)</sup>, with its focus on growth and jobs, provides the motor of a more dynamic economy. While the EU SDS is primarily concerned with quality of life, intra- and inter-generational equity and coherence between all policy areas, including external EU relations, it recognises the role of economic development in facilitating the transition towards a more sustainable society. The Lisbon Strategy thus makes an essential contribution to the overarching objective of sustainable development by focusing primarily on actions and measures aimed at increasing competitiveness and economic growth, and enhancing job creation.

The 2001 Göteborg European Council had already noted that 'strong economic performance must go hand in hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, preserving ecosystems and avoiding desertification'. Furthermore, the June 2006 European Council recognised that sustainable development 'promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity'.

The March 2008 European Council <sup>(14)</sup> launched the second three-year-cycle of the renewed Lisbon Strategy focusing on the 10 objectives outlined by the Commission in its proposal for a Community Lisbon Programme 2008 - 2010 <sup>(15)</sup>. More recently, in December 2008 the European Council asserted that 'Europe must continue to invest in its future. That is the price of its future prosperity [...], encompassing all the conditions for sustainable development' <sup>(16)</sup>.

However, the favourable economic conditions which have been maintained for many years are currently being challenged by a global economic and financial crisis, reinforcing the need for sustainability to be addressed in the EU and global financial systems and, indeed, in the economy as a whole. In response to the crisis, the Commission launched a comprehensive recovery plan for growth and jobs in November 2008 <sup>(17)</sup>, including measures to boost demand, help to



restore confidence and promote employment and social inclusion. It also includes proposals for investment in the skills and technologies which will be needed in order to ensure sustainable prosperity in the longer term.

### *Monitoring progress in the implementation of the EU SDS*

Monitoring progress in the implementation of the EU SDS is an integral part of the Strategy, which foresees that Eurostat will produce a monitoring report every two years, based on the EU set of sustainable development indicators (SDIs). The current report updates and adapts the previous edition of 2007, analysing progress in the implementation of the Strategy's objectives and targets.

As in previous editions, the indicators are evaluated against the policy objectives and targets of the EU SDS. The approach is essentially quantitative, and focused on the EU set of SDIs as of October 2008. This monitoring report thus complements the policy analysis provided in the Commission's progress report on the implementation of the EU SDS <sup>(18)</sup>.

The current economic crisis poses a number of difficulties for the analyses presented in this report. Although the recent economic turmoil has the potential to produce dramatic changes in many domains covered by the indicators appearing here, the disruptions are still ongoing and do not allow a reliable assessment of their impact on the different indicators. At present, most of the time-series analysed end in 2008 or before, so they reflect at most the first indications heralding the impacts of the crisis (see Box 0.1). The 2011 edition should be able to draw on more complete data to analyse the impacts of the crisis on the progress towards sustainable development in the EU.

This chapter sets the background for the analysis by describing the policy background (i.e. the renewed EU SDS), presenting the EU SDI set, as well as the approach used for the assessment and analysis of trends.

#### **Box 0.1: Difficulties posed by the current economic crisis for monitoring progress towards SD**

The current economic crisis poses a number of difficulties for monitoring progress in the implementation of the EU SDS. The recent economic turmoil has the potential to produce dramatic changes in several domains covered by the SDI set presented in this report, as indicated in the Commission's spring 2009 economic forecast <sup>(19)</sup>. According to this forecast, GDP is projected to contract by 4 % during 2009, with exports and investment showing particularly sharp contractions (of 12.8 % and 10.5 %, respectively). Employment is expected to decline by 2.5 %, resulting in increases of unemployment to close to 11 %. Private consumption is also forecast to decline as the labour-market situation deteriorates, although the negative impact on real disposable income growth is partly offset by the rapid fall in the rate of inflation.

In response to the economic and financial crisis, the EU and its Member States have taken measures to reform the financial system, support the real economy, promote employment and contribute to global recovery. In November 2008, the Commission launched a major recovery plan for growth and jobs, including measures to boost demand, help to restore confidence and promote employment and social inclusion. It also includes proposals for investment in the skills and technolo-

gies which will be needed in order to ensure sustainable prosperity in the longer term.

However, the disruptions have occurred too recently to allow a reliable assessment of their total impact on the different indicators, mainly due to the following reasons:

- As most of the indicators presented in this report refer to data up to 2007 or 2008, they can, at most, only reflect the first indications heralding the impacts of the crisis.
- In addition, while the crisis, as well as the measures taken by the EU and the Member States in response, may have rather immediate effects on some of the indicators (in particular those linked to economic development, such as employment and energy consumption), the consequences for other indicators may only be visible in the longer term.

As a result, the impacts of the crisis are not visible in many of the indicators presented in this edition of the report, with the exception of those presented in Chapter 1 (Socioeconomic development). The 2011 edition should be able to draw on more complete data to analyse the impacts of the crisis on the progress towards sustainable development in the EU.



## The EU set of Sustainable Development Indicators (SDIs)

Following the 1992 Rio Earth Summit Eurostat worked closely with the UN work programme on global indicators of sustainable development, and published indicator compilations in 1997<sup>(20)</sup> and again in 2001<sup>(21)</sup>.

A first EU-oriented set of SDIs was proposed following the adoption of the initial EU SDS of 2001 and was endorsed by the European Commission in 2005<sup>(22)</sup>, who foresaw the need for the regular review and adaptation of the set in order to reflect emerging policy priorities, as well as improvements in statistical data collection. Several reviews of the SDI set have been carried out by the Commission with the assistance of the working group on SDIs, which is composed of both statistical and policy representatives at national and EU level. The objectives pursued in these reviews were threefold:

- policy relevance: to adapt the SDI set to the latest version of the EU SDS and other relevant policy initiatives,
- efficient communication: to streamline the set of indicators in order to improve communication whilst maintaining the maximum stability of the set over time,
- statistical quality: to improve the overall quality of the set, taking into account the latest datasets available.

Nevertheless, the current set of SDIs, as presented in this report, is very similar to that endorsed in 2005.

### *The thematic framework*

The set of EU SDIs have been organised within a theme-oriented framework, in order to provide a clear and easily communicable structure and relevance to political decision-making. The framework is based on priority policy issues, but is flexible enough to adjust to possible changes in these priorities and objectives, bearing in mind that new issues and priorities emerge from time to time.

Over the course of several revisions, minor changes have been made to better reflect the wording of the current EU SDS, but apart from this the overall framework has proved sufficiently robust to remain unaltered. Each of the seven key challenges of the renewed EU SDS was already represented by a theme in the original indicator set, although the challenge of ‘social inclusion, demography and migration’ was represented by two separate themes (‘social inclusion’ and ‘demographic changes’). This split has been retained in order to reflect the different nature of these two issues. The framework also includes a theme on ‘socioeconomic development’ which focuses on the key objective of economic prosperity, and a theme on ‘good governance’ related to the guiding principles of the Strategy and other cross-cutting issues. Both these themes have been retained from the original version of the framework.

Although the SDI framework follows a general gradient from the economic, to the social, and then to the environmental and institutional dimension, the ten themes appear in this report in the order in which they are presented in the EU SDS:

- socioeconomic development,
- climate change and energy,
- sustainable transport,
- sustainable consumption and production,
- natural resources,



- public health,
- social inclusion,
- demographic changes,
- global partnership,
- good governance.

Each theme is further divided into subthemes to organise the set in a way that reflects the operational objectives and actions of the EU SDS.

### *The different kinds of indicators of the EU SDI set*

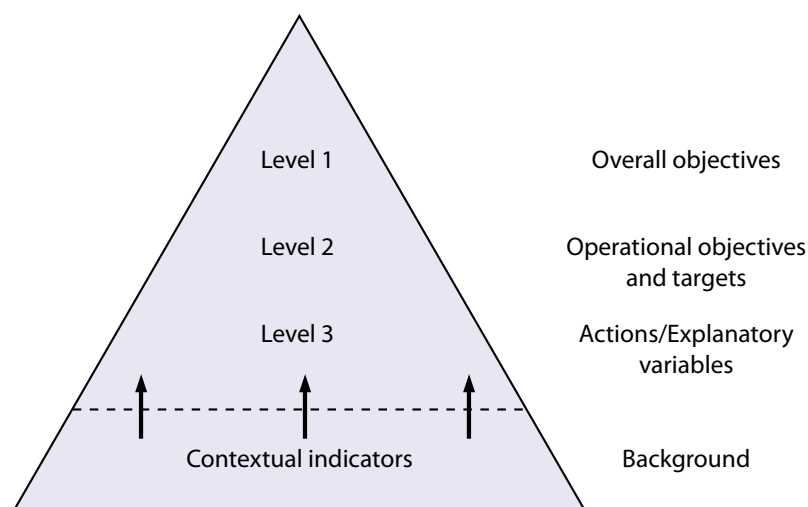
Compiling indicators and communicating efficiently about an issue as complex as sustainable development remains a challenge at all levels (EU, national, local). This is due not only to the wide range of issues to be addressed, but also to the requirement for new data, or a new approach to existing data, stemming from diverse sources.

In order to address this challenge, the EU SDI set is structured as a three-storey pyramid, distinguishing between three levels of indicators. This approach not only reflects the structure of the EU SDS (overall objectives, operational objectives, actions), but also responds to different kinds of user needs. The three-level pyramid is complemented with contextual indicators, as illustrated below:

- **Headline (or level-1) indicators** are at the top of the pyramid, monitoring the ‘overall objectives’ related to the seven key challenges of the EU SDS. On the whole they are widely used indicators with a high communicative and educational value. They are robust and available for most EU Member States, generally for a period of at least five years.
- The **second level** of the pyramid consists in most cases of indicators related to the ‘operational objectives’ of the strategy. They are the lead indicators in their respective subthemes. They are robust and available for most EU Member States for a period of at least three years.
- The **third level** consists of indicators related to actions described in the Strategy or to other issues which are useful for analysing progress towards the strategy’s objectives. Break-downs of higher level indicators, e.g. by gender or income group, are usually also found at level-3.
- **Contextual indicators** are part of the SDI set, but either do not monitor directly a particular SDS objective, or they are not policy responsive. Generally, they are difficult to interpret in a normative way. However, they provide valuable background information on issues having direct relevance for sustainable development policies and are useful for the analysis.



**Figure 0.1:** The SDI pyramid



The SDI set also describes indicators which are not yet fully developed but which would be necessary to give a more detailed and complete picture of progress. In order to avoid cluttering the list with indicators that remain without any data, two further categories of indicator are described separately:

- The **indicators under development** either already exist, but are of insufficient quality or coverage (e.g. not yet available for three years or for a majority of Member States), or are known to be currently under development by a group of experts in Europe. The indicators are expected to become available within two years and of sufficient quality, respecting standards set by the European Statistical System.
- The **indicators to be developed** are either: (i) known to be under development currently by a group of experts in Europe, but no final satisfactory result is expected within two years; or (ii) not being developed currently as far as is known.

The Commission, with the assistance of the working group on SDIs, constantly reviews the situation regarding the development of appropriate indicators, so as to further improve the relevance of the set of indicators.

The current set of indicators is described in annex at the end of this report.

## Contents of the report

The main aim of this report is to evaluate developments in the indicators chosen to monitor progress towards the objectives and targets of the EU SDS. The emphasis is on visualisation of trends, with graphs and figures being presented rather than tables of data. The actual figures for the EU as a whole, and for individual countries, can be consulted and freely downloaded from the Eurostat SDI website, at <http://ec.europa.eu/eurostat/sustainabledevelopment>

### *The general structure*

The structure of the report reflects the ten themes of the SDI framework described above. Each chapter is devoted to one theme, and structured as follows:



- Each chapter begins with an ‘overview of main changes’ summarising the evaluation of the individual indicators. It presents a visual assessment of the changes since 2000 by drawing on the evaluation categories described in Box 0.2.
- The following section provides a ‘background’, putting the theme in the context of the corresponding EU SDS key challenges and of further relevant policy initiatives in the EU and on the international level.
- The ‘potential linkages’ section provides some examples of how the issues in each chapter are related to each other, to the issues addressed in other chapters and to sustainable development in general. These linkages are not comprehensive, and there is not necessarily an empirical basis behind the links suggested. They should be considered as purely illustrative.
- The ‘further reading’ section points readers to the most relevant policy documents, as well as to statistical and scientific papers and, in some cases, websites.
- The individual indicators are then presented in a common format, beginning with an overview of the evaluation and a summary of the most important findings and concluding with a description of the policy relevance and the indicator definition.

The headline indicators are covered in more detail than the other indicators, presenting evolution over time (in general from 1990, or from the earliest year available after 1990) as well as a country breakdown for the latest year available. The presentation is shorter for level-2 and level-3 indicators, for which generally only the evolution over time is presented. For a country breakdown readers are referred to the pages devoted to SDI on the Eurostat website: <http://ec.europa.eu/eurostat/sustainabledevelopment>. However, there are exceptions to this general rule, especially if data do not allow the compilation of an EU aggregate or the presentation of an EU aggregate over time, or if the country breakdown is particularly useful for the analysis.

One particular method, which has been used in the analysis of some indicators, may need explaining. The so-called ‘S-time-distance method’<sup>(23)</sup> developed by Professor Pavle Sicherl measures the distance to target in terms of time lag, or, in other words, how many years the indicator lags behind its target path. An adaptation of this method is to calculate the year when the target would be reached at the current rate of change, that is, the year the target level would be met if the mean annual rate of change observed between 2000 and the latest year of data availability is maintained.

- Methodological notes, as well as chapter notes, are provided at the end of each chapter. The methodological notes have been deliberately kept short in this publication. Readers interested in more detail should refer to the SDI pages on the Eurostat website.





## Box 0.2: Evaluation of indicators

The indicators have been evaluated according to a set of objective rules, depending on the existence or absence of a quantified target for a particular indicator. These rules, although imperfect, provide a simple, transparent, consistent and easily understandable approach across the report.

The report evaluates according to four grade categories which indicate how favourable or unfavourable the developments in an indicator have been over recent years. The four categories are represented visually by means of the following weather icons:

Icon	Without quantitative target	With quantitative target
	Changes are clearly favourable in the context of SD objectives	Changes are on track to reach the EU target
	No or moderately favourable changes in relation to SD objectives	Changes are close to the theoretical linear path to the target
	Changes are moderately unfavourable in the context of SD objectives	Changes are far from the theoretical linear target path
	Changes are clearly unfavourable in relation to SD objectives	Changes have occurred in the wrong direction, i.e. the indicator is moving away from the target
:	Contextual indicator or insufficient data available for an evaluation (e.g. no EU aggregate available, or time-series is too short for a reliable assessment)	

It is the purpose of this publication to assess the progress of the EU as a whole since the adoption of the first EU strategy in 2001<sup>(24)</sup>. The evaluation of each indicator is therefore based, as far as possible, on the evolution of the indicator between 2000 and the latest year of data available for the EU-27<sup>(25)</sup>. However, for many indicators EU-27 data are not available for the year 2000. In such cases, if EU-27 data are available for at least three consecutive years, the evaluation is made with reference to the earliest year for which data for EU-27 are available. In other cases the series for EU-25 or EU-15 has been used.

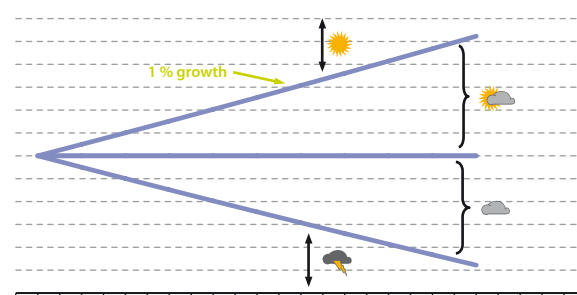
Contextual indicators are included in the report to give background information, but are not evaluated as they are not able to monitor specific policy objectives.

Evaluations are based on how each indicator has developed and do not include future projections. What is evaluated is not the sustainability<sup>(26)</sup> of the situation at any point in time, but the relative direction of changes up to the latest year for which data are available, in the light of sustainable development objectives. It is therefore a relative, not an absolute assessment. This assessment is made on the basis of quantitative rules, to ensure a consistent approach across indicators and to avoid *ad hoc* value judgements. Depending on the type of indicator and the presence or absence of a quantitative target, two different calculation methods have been applied:

### 1. Indicators without quantitative targets:

The average annual growth rate, in percentage terms, between 2000 and the latest year for which data are available is calculated. If the indicator is already expressed as a growth rate, the average of the underlying series is used. A change is assumed to be significant (clearly favourable or unfavourable) if the average annual rate of change is greater than 1 % in absolute terms. If it is between 0 and 1 % (positive or negative), it is assumed that no significant change has occurred. The direction of change is of course considered for the evaluation.

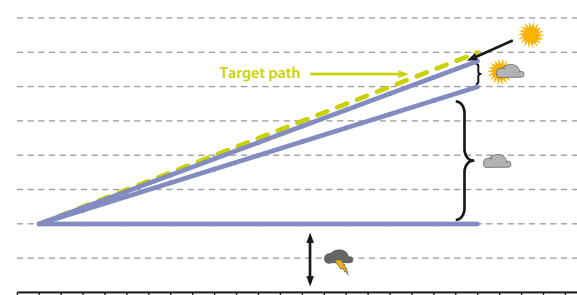
Figure 0.2: Schematic representation of evaluation without target



### 2. Indicators with quantitative targets:

When there is a clear quantitative target associated with a policy objective, the mean annual rate of change of the progress achieved between 2000 and the latest year for which data are available is calculated as a proportion of the progress that should have been achieved to meet the theoretical linear path between 2000 and the target year. Above 95 % is evaluated as 'on target path' (clearly favourable), 80-95 % is evaluated as 'close to target path' (moderately favourable), and under 80 % is evaluated as 'far from the target path' (moderately unfavourable). In addition, changes are evaluated as clearly unfavourable if they are moving in the wrong direction, i.e. away from the target path.

Figure 0.3: Schematic representation of evaluation with target





### *Data coverage*

This report covers a large part of the set of EU sustainable development indicators as of October 2008. Since this report seeks to evaluate progress towards the EU SDS, data are only presented for current EU Member States. Evaluations are based on EU-27 wherever possible. In addition, if the EU-27 series covers fewer than three years and data for EU-25 or EU-15 are available for a longer time period, the analyses refer to these longer time-series. Data for candidate countries and countries of the European Free Trade Association are not included in this report, but are accessible on Eurostat's SDI web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

Most of the data used to compile the indicators come from the regular Eurostat collection of statistics through the European Statistical System. However, in order to cover the wide range of issues related to sustainable development, other data sources have been drawn on, notably other European Commission services and the European Environment Agency.

Whenever data available on the Eurostat website have been used, the reference to the so-called 'table code' is given, so that readers can easily find the most recent version of the dataset on Eurostat's website. (Indicators of the EU SDI set, for instance, can be identified by the prefix 'tsd' in the table code.) Entering the table code in the search box on the Eurostat website will direct readers to the appropriate information.

Data were extracted mid-2009 (May - July). As far as possible they cover the period starting in 1990, up to the latest year for which data are available. For consistency, indicators presented in the form of an index use 2000 as a base year.



## Chapter notes

- <sup>(1)</sup> World Commission on Environment and Development, *Our common future*, Oxford University Press, Oxford, 1987.
- <sup>(2)</sup> Article 2 of the Treaty on European Union.
- <sup>(3)</sup> Cardiff European Council, *Presidency conclusions*, 15 and 16 June 1998.
- <sup>(4)</sup> Göteborg European Council, *Presidency conclusions*, 15 and 16 June 2001.
- <sup>(5)</sup> European Commission, *European governance – A White Paper*, COM(2001) 428.
- <sup>(6)</sup> Commission communication, *Towards a global partnership for sustainable development*, COM(2002) 82.
- <sup>(7)</sup> Barcelona European Council, *Presidency conclusions*, 15 and 16 March 2002.
- <sup>(8)</sup> Commission communication, *On the review of the Sustainable Development Strategy – A platform for action*, COM(2005) 658.
- <sup>(9)</sup> Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy*, 10117/06.
- <sup>(10)</sup> Brussels European Council, *Presidency conclusions*, 16 and 17 June 2005.
- <sup>(11)</sup> Commission communication, *Progress Report on the Sustainable Development Strategy 2007*, COM(2007) 642.
- <sup>(12)</sup> Commission Staff Working Document, *Accompanying document to the Progress Report on the European Union Sustainable Development Strategy 2007*, SEC(2007) 1416.
- <sup>(13)</sup> Lisbon European Council, *Presidency conclusions*, 23-24 March 2000.
- <sup>(14)</sup> Brussels European Council, *Presidency conclusions*, 13/14 March 2008.
- <sup>(15)</sup> Commission communication, *Proposal for a Community Lisbon Programme 2008 – 2010*, COM(2007) 804.
- <sup>(16)</sup> Brussels European Council, *Presidency conclusions*, 11 and 12 December 2008.
- <sup>(17)</sup> Commission communication, *A European economic recovery plan*, COM(2008) 800; Commission communication, *Driving European recovery*, COM(2009) 114; Commission communication, *A shared commitment for employment*, COM(2009) 257; Commission communication, *Cohesion policy: investing in the real economy*, COM(2008) 876.
- <sup>(18)</sup> Commission communication, *Mainstreaming sustainable development into EU policies: 2009 Review of the European Union strategy for sustainable development*, COM(2009) 400.
- <sup>(19)</sup> European Commission, 'Economic forecast, spring 2009', *European Economy*, 3/2009.
- <sup>(20)</sup> Eurostat, *Indicators of sustainable development: A pilot study following the methodology of the United Nations Commission on Sustainable Development*, Office for Official Publications of the European Union, Luxembourg, 1997.
- <sup>(21)</sup> Eurostat, *Measuring progress towards a more sustainable Europe: Proposed indicators for sustainable development*, Office for Official Publications of the European Union, Luxembourg, 2001.
- <sup>(22)</sup> Communication from Mr Almunia, *Sustainable development indicators to monitor the implementation of the EU Sustainable Development Strategy*, SEC(2005) 161.
- <sup>(23)</sup> Sicherl, P., 'Measuring societal progress', *Statistical Days, Proceedings Volume of the 16th Statistical Conference*, Statistical Office of the Republic of Slovenia, Ljubljana, 2006, pp. 43-62.
- <sup>(24)</sup> Although it could be argued that longer time periods are needed to monitor sustainable development, it is the purpose of this publication to assess progress since commitments were taken on the various issues monitored. The year 2000 was chosen as reference year as it is the last round year before the adoption of the first EU Strategy in 2001.
- <sup>(25)</sup> EU aggregates are back-calculated when sufficient information is available – for example, data relating to the EU-27 aggregate is often presented for periods prior to the accession of Bulgaria and Romania in 2007 and the accession of ten new Member States in 2004, as if all 27 Member States had always been members of the EU. The label is changed if the data refer to another aggregate (EU-25 or EU-15) or a footnote is added if the data refer to a partial aggregate created from an incomplete set of country information (no data for certain Member States or reference years).
- <sup>(26)</sup> It is useful to differentiate the concept of 'sustainable development' from the concept of 'sustainability'. 'Sustainability' is a property of a system. The focus is on maintaining a particular state of the system through time. The concept of 'sustainable development' refers to a process, and puts more emphasis on the idea of change or development. The strategy aims to 'achieve continuous improvement of quality of life', and the focus is therefore on sustaining the process of improving human well-being. Rather than seeking a stable equilibrium, sustainable development is a dynamic concept, recognising that changes are inherent to human societies.



# Socioeconomic development












*'Promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy, which provides high living standards and full and high-quality employment throughout the European Union'*

## Overview of main changes

Overall, most trends were positive over the period 2000 to 2007 in the socioeconomic development theme. However, the picture is mixed and some areas showed slow, or even no, progress. Economic growth continued throughout the period, while regional disparities grew and households were saving less. Most of the employment indicators progressed in line with the Lisbon targets, but the overall employment rate was lacking in impetus. Labour productivity increased and energy intensity decreased in line with EU objectives. More spending on research and development is needed if the target is to be reached.

If it were possible to take the recent economic and financial crisis into account, however, the picture would be radically different. The latest data from 2008 and forecasts for the coming years indicate a sharp decline of economic growth.


**Table 1.1: Evaluation of changes in the socioeconomic development theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Growth of GDP per capita	<b>Economic development</b>	
	 Investment	 Regional disparities in GDP*  Household saving
		<b>Innovation, competitiveness and eco-efficiency</b>
	 Labour productivity growth**	 Research and development expenditure  Energy intensity
		<b>Employment</b>
	 Employment	 Female employment  Regional disparities in employment  Unemployment


\* From 2001


\*\* From 2003

**LEGEND:**

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



## Headline indicator

*Period of ample economic growth came to an end with the financial crisis*

Between 2000 and 2008, GDP per capita grew by 1.8 % per year on average. During the economic upswing from 2003 to 2007, growth rates went up to 2.7 % for the EU as a whole, although this rate was far exceeded in several eastern European countries. However, due to the economic crisis, growth of GDP per capita fell to 0.5 % in 2008. Forecasts estimate that it will drop to -4.2 % in 2009. Despite the considerable uncertainty in these forecasts, the projection for 2009 is supported by short-term quarterly data.

## Economic development

*Slight increase in investment triggered by business sector*

Over the period 2000 to 2007 the share of investment in GDP moderately increased, resulting in a relative peak of 21.3 % in 2007 primarily due to growing business investment over the last years. Overall, the investment rate remained fairly stable during a period of more than ten years (from 1995 to 2007), amounting on average to 20 %.

*Regional disparities of economic prosperity still rising*

Regional disparities of economic prosperity remain a challenge for the EU and are still rising in most Member States. Within-country dispersion of regional GDP is highest in eastern European countries, where the rapid transition into market economies has led to high income inequality.

*Upturn in saving rate following steady fall since 2001*

The household saving rate peaked in 2001 and then steadily decreased until 2007. There has been an upturn in the third quarter of 2008, probably in response to the financial crisis. Differences across Member States remain significant.

## Innovation, competitiveness and eco-efficiency

*Enlargement stimulated labour productivity growth*

The annual growth of labour productivity was boosted in the early years of the decade by the catching-up of the new Member States prior to the 2004 enlargement. It peaked in 2003, but by 2007 had fallen below its long-term average.

*R&D expenditure still far off target*

The share of total R&D expenditure in GDP has remained fairly stable at around 1.8 %, thus staying far from the target of 3 % of the Lisbon Strategy. Only two Member States exceeded the target in 2007.

Energy intensity of the economy significantly decreased between 2000 and 2008, so that the target of 1 % annual reduction in energy intensity could be met.

## Employment

*Growth of employment rate is too slow to meet target*

Except for a short cutback in 2002, the employment rate continuously increased over the last decade. However, the annual average growth of employment would need to considerably speed up to reach the EU target of 70 % in 2010 set by the Lisbon Strategy.

In contrast, female employment during the last two years has already exceeded interim values on the path towards reaching the 60 % female employment target by 2010. The gap between male and female employment has been shrinking continuously.

*Positive trend in female employment, target is likely to be met*

Dispersion of regional employment rates developed favourably between 2003 and 2007, to the extent that in 2007 the lowest value of the entire observed time period was reached. Unemployment, following the economic cycle with a certain time lag, decreased over 2005 to 2008 down to 7 %. This trend came to a sudden end in 2008 due to changes in the economic circumstances. Disparities by age-group and gender have diminished but remain important issues of European social cohesion.



In line with the economic upturn, overall EU unemployment decreased between 2004 and 2008 and reached a lower level than in the previous economic cycle. Disparities by age-group and gender went down. Nevertheless they remain important issues of European social cohesion.

*Reduced regional dispersion of employment and decreasing unemployment*

## Background

Improving socioeconomic conditions has been one of the fundamental drivers for the vision of a united Europe and is, therefore, non-surprisingly a vital component of a number of high-level Community policies. Two of those important policies are the Lisbon Strategy for growth and jobs <sup>(1)</sup> and the European Union's Sustainable Development Strategy (EU SDS) <sup>(2)</sup>. Both aim at achieving a more sustainable socioeconomic development and thus outline important strategic development trajectories.

*Sustainable socioeconomic development a core element of EU SDS and Lisbon Strategy*

The European Council claims in the renewed EU SDS that 'the EU SDS forms the overall framework within which the Lisbon Strategy ... provides the motor of a more dynamic economy'. Against this background, the theme 'socioeconomic development' of this report provides the link between those two guiding strategies. Indicators in this theme to some extent overlap with indicators measuring the progress of the Lisbon Strategy.

Overarching objectives of socioeconomic development aim for the creation of a knowledge-based economy, technology transfer, promotion of employment and enhancement of human and social capital as well as reducing social exclusion. Those objectives depict the most important aspects of socioeconomic development, and are measured in terms of economic growth and competitiveness, technology and innovation potential, creation of jobs and social well-being as well as environmental sustainability. Considering those objectives, the renewed Community Lisbon Programme for 2008-2010 creates a direct connection to the EU SDS and the socioeconomic indicators outlined in this report.

Economic developments over the last decade allow basing analyses in this chapter on an entire economic cycle. Most notably, three phases can be clearly derived from socioeconomic data in the EU: the downturn from 2000 to 2003, the upturn from 2003 to 2007, and the recent crisis since 2008.

The economic downturn between 2000 and 2003 has been extensively documented in the 2005 and 2007 Monitoring Reports. Several socioeconomic indicators declined during this phase, including GDP per capita growth, investment, household saving, and employment-related issues.

In turn, the economic upswing over the period 2003 to 2007 resulted in overall positive effects on GDP per capita growth, increasing productivity growth and recovering of investment, accompanied by low unemployment rates as well as decreasing disparities in regional employment. Although economic growth rates were not as high as during the previous upswing, favourable development could be observed in several socioeconomic indicators. Despite total employment being still far from target, employment and unemployment indicators also made considerable progress until 2007.

Regarding the third phase, the recent crisis, certain effects can already be observed in this report. Forecasts are also available. However, currently available data bear high uncertainties and make it difficult to draw a reliable picture. Certainly, the 2011 EU SDS Monitoring Report will be able to build on more complete data to analyse impacts of the crisis on socioeconomic development as well as other indicators.

*Effects of the crisis start to become visible in socioeconomic indicators*





Considering the challenges of the current economic crisis and the need for cushioning the European Union from more and longer lasting negative effects on socioeconomic development, the Council adopted the European Economic Recovery Plan (EERP, Box 1.1) in December 2008. Moreover, confidence in the ability of the EU to tackle the financial and economic crisis was expressed in the 2009 spring European Council <sup>(3)</sup>. In fact, the current crisis shows how deeply social and economic issues are interconnected.

### Box 1.1: The European Economic Recovery Programme (EERP)

As a joint response to the global economic crisis and as part of the European Commission's December Annual Progress Report of the Lisbon Strategy, the European Economic Recovery Plan <sup>(4)</sup> (EERP) was adopted by the European Council in December 2008. The Plan is based on two mutually reinforcing main elements. Firstly, short-term measures to boost demand, save jobs and help restore confidence. Secondly, 'smart investment' to yield higher growth and sustainable prosperity in the longer-term. The EERP proposes 'Ten Actions for Recovery', organised according to the four priority areas of the Lisbon Strategy, and therefore also reflecting the most important issues of socioeconomic development:

#### People

1. Launch a major European employment support initiative
2. Create demand for labour

#### Business

3. Enhance access to financing for business
4. Reduce administrative burdens and promote entrepreneurship

#### Infrastructure and energy

5. Step up investment to modernise Europe's infrastructure
6. Improve energy efficiency in buildings
7. Promote the rapid take-up of 'green products'

#### Research and innovation

8. Increase investment in R&D, Innovation and Education
9. Developing clean technologies for cars and construction
10. High-speed Internet for all

## Potential linkages

### *Business investment, employment and unemployment cyclically linked to economic growth*

Issues within the socioeconomic development theme are strongly interlinked <sup>(5)</sup>. For example, an increase or decrease in GDP per capita growth rate has effects on many other issues, as the overall economic development determines the level of financial resources available to fuel activities via public spending, business investment or private consumption. Not surprisingly, several indicators can be particularly observed to be linked to the economic cycle, either directly or indirectly, in some cases with a time lag. Although delayed, significant effects of the economic cycle can also be seen on the employment and unemployment rate, which favourably developed in times of economic upswing

Following the same logic, effects of the positive economic development between can be linked to the significant decrease in unemployment rates which appear to respond to changes in the economic environment e.g. GDP per capita growth and investment.

The share of business investment in GDP shows a direct link to the development of the GDP per capita growth rate. While a peak in the latter was reached in 2007 (18.7 %) according to latest available data from the last quarter of 2008, investment rates also declined sharply due to the current economic turmoil.

### *Linkages to social inclusion*

Exclusion from the labour market is a major factor of social exclusion. In addition, a rise in unemployment is likely to increase the risk of poverty, especially when lasting over long periods. Similar to overall EU GDP per capita growth, growth of regional GDP per capita can have positive effects on employment.



An important challenge for socioeconomic development arises from the ageing of the population, reflected in a growing old-age-dependency ratio. This means that a continuously shrinking proportion of the population of working age needs to generate the economic resources for society as a whole. Accordingly, the employment rate, labour productivity or average annual working time (or all three variables) need to be increased in order to maintain a constant level of economic prosperity. The progress of fertility rates in recent years could represent a positive signal for the future supply of the workforce in the EU. Further, achieving the target of half of the older population in employment by 2010 will contribute to the final objectives of sustainable development.

*Linkages with demographic changes*

A rise in GDP per capita growth is viewed as positive for socioeconomic development, as it has several positive effects on the economy and social life. On the one hand it reflects growth in production and consumption, but on the other hand – assuming that technology does not remarkably improve or consumption and production patterns do not change dramatically – it means also a more intensive exploitation of resources. Thus, if not counterbalanced by an increase in resource productivity, an increase in GDP per capita growth may have a detrimental influence on climate change and the availability of energy and other resources on nature and biodiversity. Hence, sustainable development relies on promoting the decoupling of economic growth from environmental degradation, through resource efficiency, environmental technologies and changes in production and consumption patterns.

*Linkages to sustainable consumption and production and climate change*

#### Further reading

Commission communication COM(2009) 257 final - A Shared Commitment for Employment

A European Economic Recovery Plan (EERP); COM(2008) 800 final

Implementation Report for the Community Lisbon Programme 2008 – 2010; COM(2008) 881 final 1

Cohesion Policy: investing in the real economy; COM(2008) 876 final 1

European Competitiveness Report 2008; COM(2008) 774 final; [SEC(2008)2853]

Progress Report on the Sustainable Development Strategy 2007; COM(2007) 642 final; {SEC(2007)1416}

Progress report on the European Union Sustainable Development Strategy 2007; Commission staff working document; SEC(2007) 1416

Structural Indicators of Eurostat <sup>(6)</sup>



## Growth of GDP per capita



Economic growth in the EU-27 developed favourably over the period 2000 to 2007. The upturn was not as strong, however, as in the previous economic cycle. Data for 2008 show a sharp decline, as do forecasts for 2009

### Analysis

*GDP growth picks up after 2000, but with rates lower than in the late 1990s*

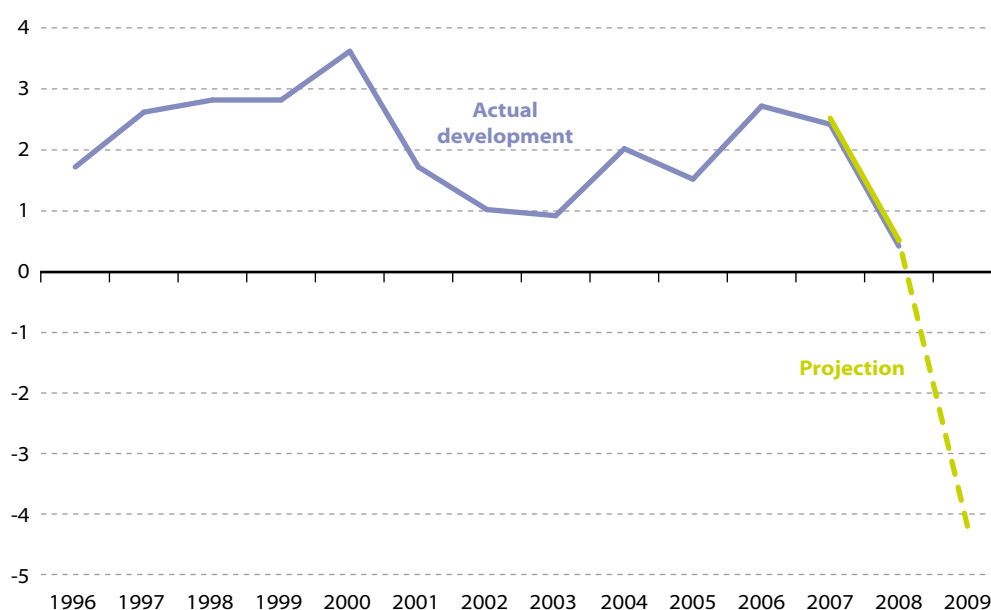
Economic growth, measured as the growth rate of GDP per capita, reflects the phases of the economic cycle. After a peak in 2000 of 3.6 %, growth rates fell to 0.9 % in 2003. In the subsequent economic upturn the growth rate climbed to 2.7 % in 2006, which was not quite sustained in 2007, and was followed by a substantial drop in 2008. The overall annual average growth rate over the period 2000-08 was 1.8 %. The high rates of economic growth, which had prevailed between the mid-1990s and 2000, were not attained during the present economic cycle.

*Downturn projected for 2009*

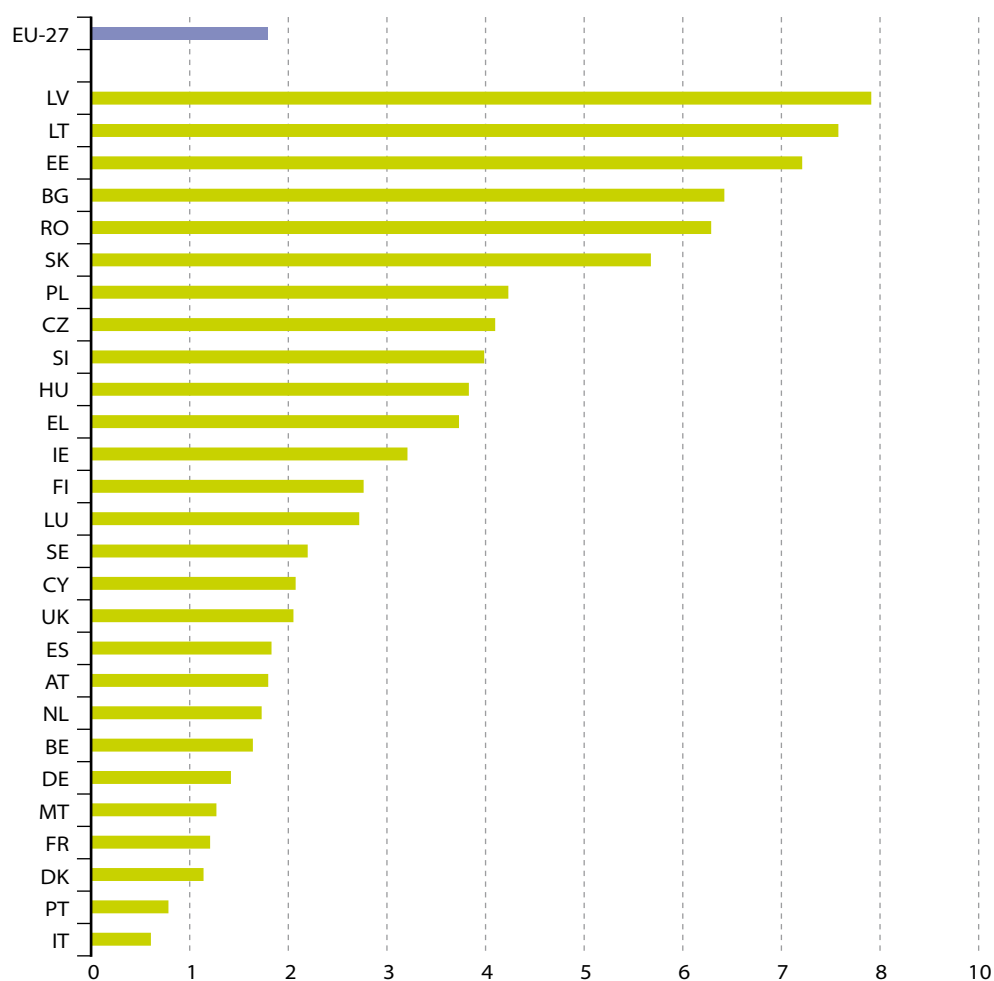
The economic upturn came to a sudden end in 2008 resulting in a fall of the growth rate down to 0.4 %. In the current global economic crisis, forecasts suggest that the GDP per capita growth rate will slump to a negative value of -4.2 % in 2009 <sup>(7)</sup>.

**Figure 1.1:**  
Growth rate of real GDP per inhabitant, EU-27 (%)

Source: Eurostat (tsdec100)



*NB:* Provisional values from 2004-08 for EL. Estimated value for 2008 for SK. Forecast figures for 2007 and 2008 for RO and for 2008 for AT, as well as for all countries for 2009. Forecasts are provided by the Directorate-General for Economic and Financial Affairs.



**Figure 1.2:**  
Average annual  
growth rate of  
real GDP per  
inhabitant  
(2000-2008) (%)

Source: Eurostat  
(tsdec100)

NB: 2008 values for AT and RO are forecasts, for EL provisional and for SK estimate.

Until 2007 economic growth remained strong in most of the eastern European Member States, with several showing average growth rates of more than 6 % over the period from 2000 to 2007 and even as high as 9.4 % in Latvia. This being far higher than the EU-27 average of 2.0 %. The high growth in these countries, largely driven by exports, was expected to contribute to a progressive shrinking of the difference in economic output between the newer and the established Member States ('catching-up effect')<sup>(8)</sup>.

*New Member States catching up with sustained high rates of economic growth*

At the same time the new Member States are being hit strongly by the financial crisis. The sharpest declines between 2007 and 2008 occurred in these countries. Latvia's high growth rate of 10.6 % in 2007 fell by 14.8 percentage points to -4.2 % in 2008. In Estonia the growth rate fell by 10 percentage points and four other new Member States experienced drops of more than 3 percentage points. Forecasts show negative rates for most of these countries for 2009.

*Financial crisis hit new Member States*

**Indicator relevance**

The growth rate of GDP per capita is a measure of the dynamism of the economy and its capacity to create new jobs. A sufficiently high GDP per capita growth rate means that society is generating additional economic resources to meet the (growing) economic needs of the present generation, to invest in view of higher returns in the future and to address social and environmental concerns. However, GDP per capita is only a rough proxy of citizens' economic prosperity and cannot be considered as a holistic measure of well-being as, for instance, it fails to capture the value of non-market services.

**Definition** <sup>(9)</sup>

Gross domestic product (GDP) is defined as the value of all goods and services produced less the value of any goods or services used in their creation. The calculation of the annual growth rate of GDP per capita expressed in volumes is intended to allow comparisons of the dynamics of economic development both over time and between economies of different sizes. For measuring the growth rate of GDP in terms of volumes, the GDP at current prices is valued in the prices of the previous year and the thus computed volume changes are imposed on the level of a reference year; this is called a chain-linked series. Accordingly, price movements will not inflate the growth rate.



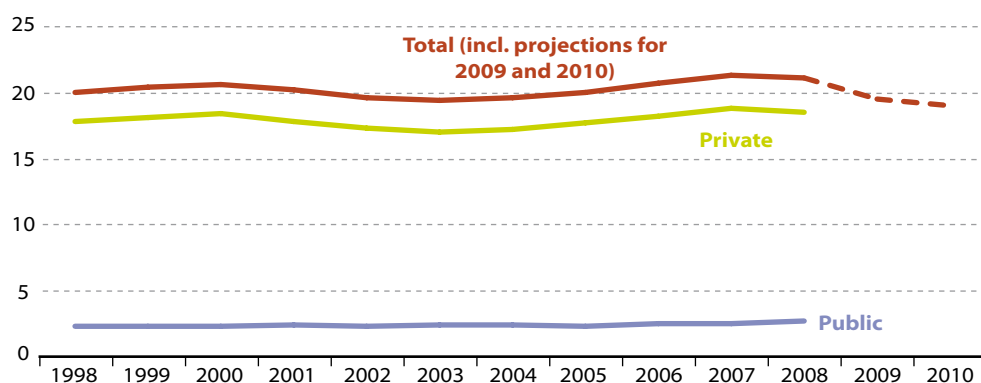
## Investment

The ten-year average of the EU-27 gross investment rate amounts to 20 %. The investment rate stood at 21.2 % of GDP in 2008



During the economic downturn of 2000 to 2003, the share of total investment in GDP fell to a low of 19.4 %, due to the slower development of business investment. Since 2003, total investment spending has been steadily rising at a higher rate than GDP as a consequence of expanded business spending fuelled by favourable economic conditions, resulting in an investment rate of 21.3 % in 2007. This amount is 0.7 percentage points higher than in the previous cyclical peak of 2000. As the share of public investment in GDP has remained stable since 2000 at around 2.4 %, it is mainly business investment which has made the difference in influencing total investment.

Not surprisingly, in the light of the current economic crisis and because investment spending is typically a strongly cyclical and volatile component of GDP growth, forecasts for the next years show a considerable cutback in total investment down to 19 % of GDP in 2010. Despite the considerable uncertainty in these forecasts, the projection for 2009 is supported by recent data which show a sharp decline of 10.7 % of seasonally adjusted gross investment in the first quarter of 2009 compared to the previous year <sup>(10)</sup>. In order to anti-cyclically compensate for the foreseeable decline in business investment, cohesion policy, which is aimed at strengthening public investment, especially in the economically least-developed regions <sup>(11)</sup>, has been re-emphasised in the European Economic Recovery Plan. Cohesion policy is planned to account for almost 6 % of expected GDP on average over the period 2007 to 2013. The envisaged measures are intended to stimulate private investment and consumption by restoring business and consumer confidence in the economy.



**Figure 1.3:**  
Total investment,  
by institutional  
sector, EU-27  
(% of GDP)

Source: Eurostat  
(tsdec210, tsdec211,  
tsdec212)

Acquisitions of capital goods determine to a large extent the future economic performance of a society by deepening and widening the capital stock, be it in the form of physical capital or knowledge. Therefore, together with labour supply, it directly impacts on potential growth rates. From a sustainable development perspective, investment in more environmentally friendly technologies is crucial to improve eco-efficiency.

### Indicator relevance

**Definition** The indicator gives the share of GDP that is used for gross investment (rather than being used for e.g. consumption or exports). It is defined as total gross fixed capital formation (GFCF) expressed as a percentage of GDP, for the public and private sectors. GFCF consists of resident producers acquisitions, less disposals of fixed assets plus certain additions to the value of non-produced (usually natural) assets realised by productive activity. It also includes certain additions to the value of non-produced assets realised by productive activity, such as improvements to land.





## Regional disparities in GDP

Economic wealth is less and less equally distributed among regions. Between 2001 and 2006, in the EU-27 and in most EU Member States, disparities of GDP per capita between NUTS3 <sup>(12)</sup> regions have been increasing



In 2006, within-country dispersion rates of regional GDP exceeded 30 % in eight European countries; seven of which are located in eastern Europe. The rapid transition into market economies has apparently led to high and ongoing polarisation of economic output and an uneven distribution of wealth amongst the regions. Between 2001 and 2006 the within-country dispersion rate of regional GDP rose in 18 out of 24 Member States and there were favourable developments in only a few countries. In 2006, the highest rates of dispersion of regional GDP were in Latvia, Estonia, Hungary and Bulgaria, followed by Slovakia, Romania and Poland. The lowest rate of disparity in 2006 was found in Malta (with only two regions), and in Sweden, the Netherlands, Finland and Spain. Overall, the dispersion rate grew in the EU-27 by 1.1 percentage points between 2001 and 2006 (from 32 % to 33.1 %).

### Analysis

*Dispersion of regional GDP highest in eastern European countries*

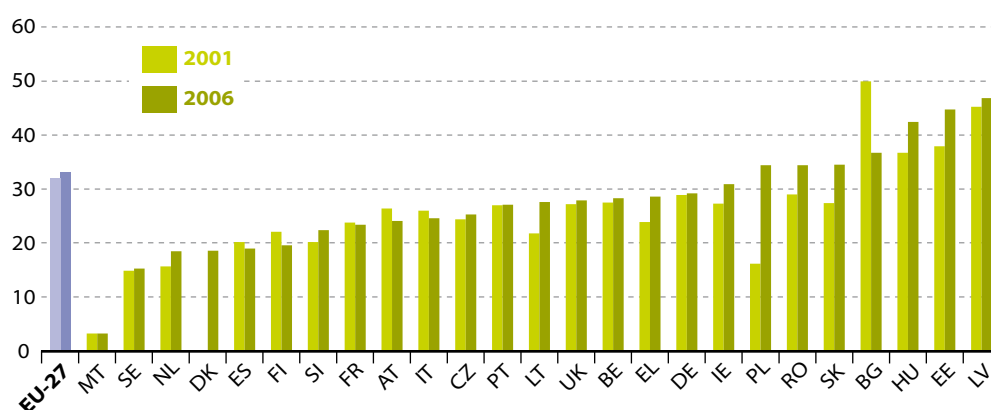


Figure 1.4: Dispersion of regional GDP per inhabitant (%)

Source: Eurostat (tsdec220)

Reducing regional disparities within countries is an important goal of the EU and an objective of the EU Sustainable Development Strategy, which aims for 'a high level of social and territorial cohesion at EU level and in the Member States as well as respect for cultural diversity'. The Agenda 2000 reform of the Structural Funds focuses on three priority objectives, of which Objective 1 promotes the catching-up of the economies of regions whose development is lagging behind <sup>(13)</sup>. This convergence objective addresses NUTS2 regions whose GDP per capita is less than 75 % of the Community average. Comparing developments in regional disparities in NUTS2 and NUTS3 level it can be concluded that while disparities decreased in the former they increased in the latter. Therefore, although the cohesion policy of the EU is delivering results, the trends are less favourable for smaller regions.

### Indicator relevance

The within-country dispersion rate of regional GDP (at NUTS level 3) is measured by the sum of the absolute differences between regional and national GDP per inhabitant, weighted with the share of population and expressed in per cent of the national GDP per inhabitant. The indicator is calculated from regional GDP figures based on the European System of Accounts (ESA95). The dispersion of regional GDP is zero when the GDP per inhabitant in all regions of a country is identical, and it rises if there is an increase in the distance between a regions' GDP per inhabitant and the country mean.

### Definition

## Household saving



The share of saving in the disposable income of households fell between 2001 and 2007 in the EU-27, although experienced an upturn in 2008. The saving rate differs considerably between Member States

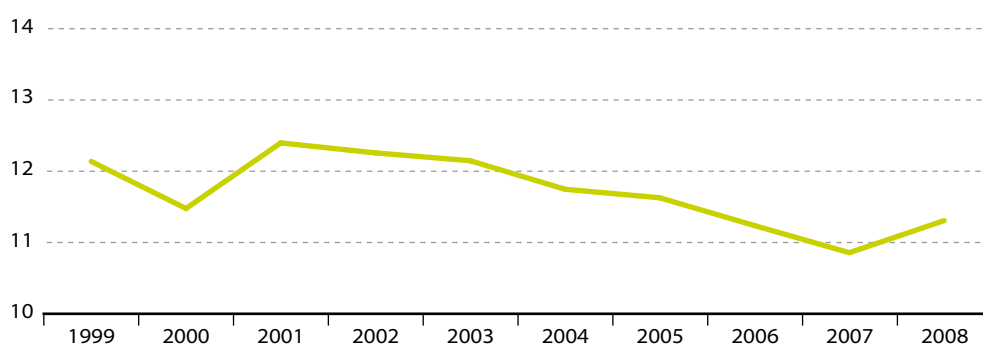
**Analysis**  
*Sharp increase in household saving with arrival of financial crisis*

In response to the economic downturn over the years 2001 to 2003, the saving rate, representing the part of households' disposable income not used for final consumption, climbed to 12.4 % in 2001 and then fell steadily at a modest rate during the following years of economic upturn until 2007. It then experienced an upturn in 2008, reaching a level of 11.3 %. Most likely low interest rates, combined with low and stable inflation, led to an increasing credit demand from consumers, reducing their propensity to save. The saving rate shows significant differences across EU Member States with figures ranging from -4.3 % to +16.7 % in 2007.

Since short-term increases in the saving rate are often linked with pessimism about the future of the economy and movements in the interest rate, it is not surprising that household savings rose in the fourth quarter of 2008 and reached 13.8 % in the first quarter of 2009 <sup>(14)</sup>.

**Figure 1.5: Gross household saving rate, EU-27**  
(% of gross household income)

Source: Eurostat (tsdec240)



**Indicator relevance**

Saving measures the part of income that may be used for investment. It thus represents the financial resources that can be allocated to modify the stocks of the productive, natural and human capital, upon which the welfare of future generations ultimately depends. Household saving constitutes the largest part of the total saving in the economy. As non-marketed environmental and social functions and services are not reflected in the saving rate, trends in this indicator should be analysed in conjunction with non-monetised indicators to assess sustainability, taking account of the net depletion of natural resources and accumulation of human capital.

**Definition**

The gross household saving rate measures the portion of disposable income that is not used by the household for final consumption. It is measured by gross saving divided by gross disposable income adjusted for the change in the net equity in pension fund reserves.



## Labour productivity growth

Labour productivity of the EU-27 countries is growing but at a slower rate than in 2003. Despite convergence, considerable differences between Member States persist



The growth rate in EU-27 labour productivity has fallen from 2.2 % in 2003 to 1.1 % in 2007. This has been largely due to a decline in the previously high growth rates of eastern European countries.

The slowdown in labour productivity growth between 2003 and 2007, during an economic upswing, might be explained by many factors, such as declining investment per employee, slowdown in the rate of technological progress, sluggish reorientation of the economy toward sectors with high productivity, a relatively small size of the EU's information and communication technology industry <sup>(15)</sup> and, not the least, a stagnating share of R&D expenditure in GDP (see indicator on 'R&D expenditure'). Despite some convergence of labour productivity growth rates over these five years, which was primarily driven by the slow-down in catching-up of Member States in the eastern part of the EU, large differences between countries remain. In 2007, there were six countries with growth rates higher than 4 %.

Even though an EU-27 aggregate for 2008 is not available at the time of the finalisation of the manuscript, several Member States' growth rates sharply declined. Furthermore, out of 14 Member States which have already produced growth figures, nine have negative growth rates. At this stage it is too early to draw firm conclusions, but this negative trend may be explained by the economic crisis.

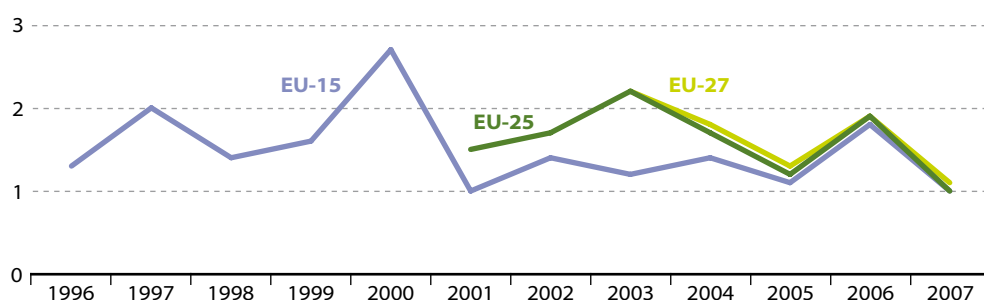


Figure 1.6:  
Growth rate  
of labour  
productivity per  
hour worked  
(price-adjusted in %)

Source: Eurostat  
(tsdec310)

The indicator is intended to give a picture of the competitiveness of the EU's economy over time. If GDP grows and the amount of worked hours remains relatively stable, this indicator will also inevitably grow, indicating an annual increase in the output produced by one hour of labour. In terms of the development of international competitiveness, it is the rate of growth which is of interest.

Labour productivity per hour worked is calculated as real output (GDP deflated) per unit of labour input (measured by the total number of hours worked). Measuring labour productivity per hour worked provides a better picture of productivity developments in the economy than labour productivity per person employed, as it eliminates differences in the full time/part time composition of the workforce across countries and years.

**Indicator  
relevance**

**Definition <sup>(16)</sup>**



## Research and development expenditure



EU spending on research and development remains far from the target value of 3 % of GDP in 2010

### Analysis

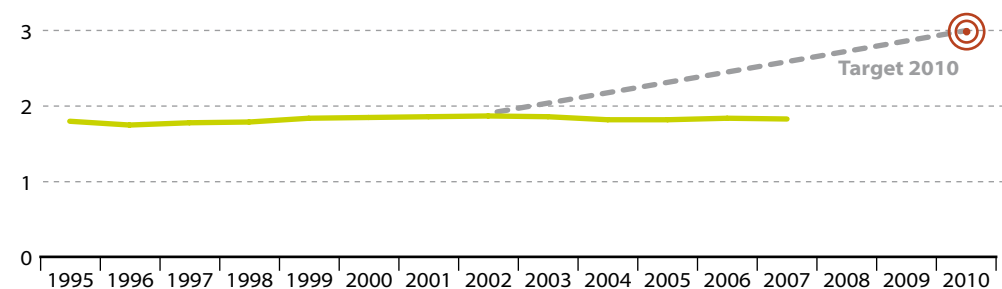
#### R&D expenditure far from target path

The share of R&D spending as a percentage of GDP remained at about 1.8 % over the period 2000 to 2007. R&D expenditure has thus made no significant progress towards the target of 3 % of GDP set for 2010. At 1.85 % in 2007, this share is below the OECD average of 2.3 %; and both the USA and Japan (at 2.3 % and 2.1 % respectively) devote higher shares of their budgets to R&D (2006 data) <sup>(17)</sup>.

Although most Member States have set national targets, these are rarely translated into budgetary reality, and only Finland and Sweden exceed the 3 % target. In 2007, as in the past, Sweden led with a share of 3.6 % which also gives it a high ranking globally. It was closely followed by Finland with 3.5 %. Austria, Denmark and Germany stood at about 2.5 %. However while Denmark and Germany have only made marginal increases in R&D spending, Austria, on the other hand, increased its spending relative to GDP by 0.6 percentage points. It is Estonia which raised its share the most from 0.6 % to 1.1 % and the largest decline took place in Slovakia where R&D budget was reduced by 0.2 percentage points from 2000 to 2007. Besides Slovakia eight other Member States decreased their contribution over this period.

Figure 1.7:  
Total R&D  
expenditure,  
EU-27 (% of GDP)

Source: Eurostat  
(tsdec320)



NB: Eurostat estimates.

### Indicator relevance

Expenditure on R&D contributes to the knowledge society and prepares the ground for future innovation. The development of new applications, technologies and organisational techniques are necessary complements for changing behaviour and achieving the shift towards a sustainable society. Research is also needed to identify and measure unsustainable trends and to investigate the best way to address them. Experimental development is crucial to transform knowledge into an operational mode that makes changes happen. The EU Sustainable Development Strategy identified R&D as one of the two 'cross-cutting policies contributing to the knowledge society' and stressed 'the positive role of technology for smart growth', while highlighting the 'need for further research in the interplay between social, economic and ecological systems'. Furthermore the European Economic Recovery Package also reiterates the need to raise the level of R&D investment.

### Definition

The indicator is defined as gross domestic expenditure on research and experimental development (GERD) as a percentage of GDP. GERD includes expenditure from business enterprise, higher education, government and private non-profit expenditure in R&D.



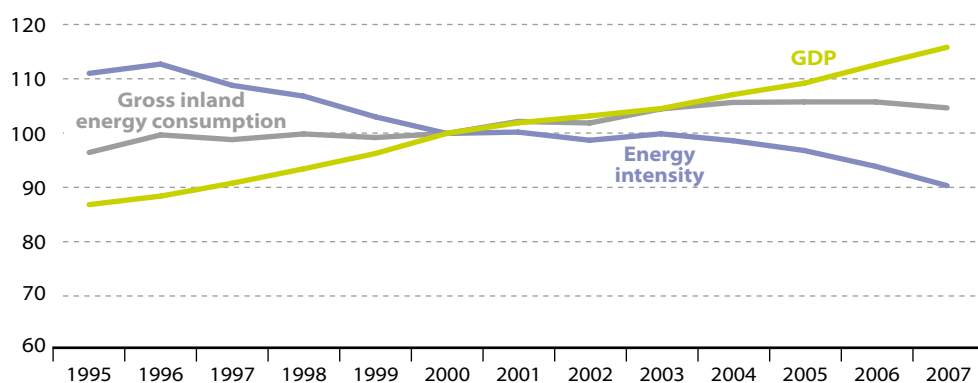
## Energy intensity

The energy intensity of the EU-27 economy decreased significantly between 2000 and 2007 and the target of 1 % annual reduction in energy intensity has been achieved



The development of energy intensity shows a strong link to the economic cycle: It decreased from 1996 to 2000, remained constant from 2000 to 2003, and further decreased from 2003 to 2007.

Viewed in more detail, between 1995 and 2000 inland energy consumption grew at an average rate of 0.7 % per year, much slower than the GDP increase of 2.9 % per year on average. As a result, energy intensity decreased by 2.1 % per year on average in that period. Since 2000, gross inland energy consumption continued to increase by an average of 0.7 % per year, whilst GDP rose at an average rate of 2.2 % between 2000 and 2007. This resulted in a reduction of energy intensity of 1.5 % per year on average. Although interrupted by the economic downswing from 2000 to 2003 the overall decline in energy intensity has been sufficient to meet the target of 1 % reduction per year on average.



### Analysis

*Energy intensity development shaped by economic growth*

*Decrease since 2000 sufficient to meet target*

**Figure 1.8:**  
Energy intensity of the economy, EU-27

(index 2000 = 100)

Source: Eurostat (tsien020)

By measuring how much energy is used to produce one unit of economic output, energy intensity addresses one aspect of eco-efficiency. The indicator helps identifying whether there is a decoupling between energy consumption and economic growth. Although no quantified objective has been set in the EU Sustainable Development Strategy for energy intensity, in 1998 the Commission proposed an indicative Community-wide target of an additional 1 % annual reduction in energy intensity by the year 2010<sup>(18)</sup>. Furthermore, in the Energy Policy for Europe, the European Council aims to achieve the objective of saving 20 % of the EU's energy consumption compared to projections for 2020, and a binding target of a 20 % share of renewable energies in overall EU energy consumption by 2020<sup>(19)</sup>.

### Indicator relevance

Total energy intensity is the ratio between the gross inland consumption of energy and the gross domestic product (GDP). Energy consumption comprises the consumption of solid fuels, liquid fuels, gas, nuclear energy, renewable energies, and other fuels.

### Definition<sup>(20)</sup>



## Employment



With the exception of a slight decline in 2002, employment rates increased in the EU-27 over the last decade. However, the interim target of 67 % by 2005 was not reached and annual average growth of the indicator would need to speed up considerably to meet the EU target of 70 % by 2010

### Analysis

#### *Sharp increase in household saving with arrival of financial crisis*

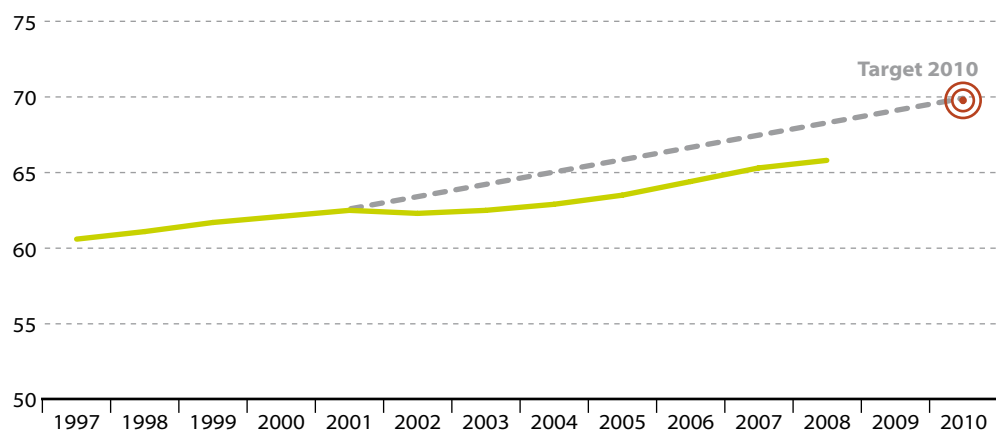
Between 2000 and 2008, the employment rate in EU-27 rose by 3.7 percentage points from 62.2 % to 65.9 %, but remains three years behind the linear target path. The steady increase was interrupted only in 2002 in response to a slowdown of investment at that time (see indicator on 'Investment'). The annual increase in the employment rate remained comparatively low until the economy recovered in 2004 and its growth was insufficient to reach the intermediate employment target of 67 % in 2005. Differences between EU Member States are sizeable, with employment rates ranging in 2008 from 55.2 % for Malta to 78.1 % in Denmark.

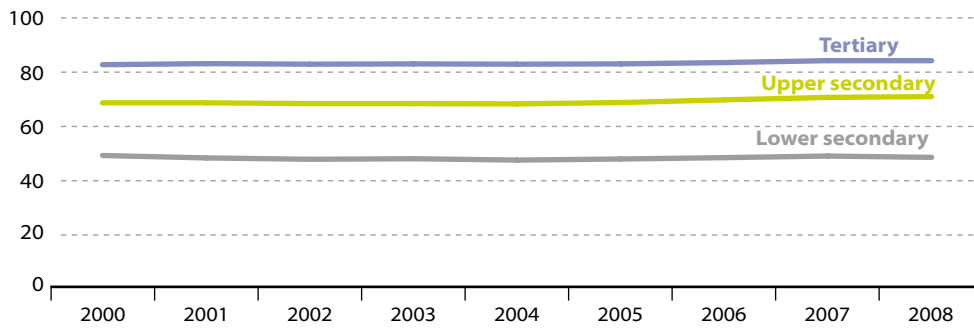
If the employment rate continues to rise at the average annual rate of change so far (0.46 percentage points per year between 2000 and 2008), the 70 % target set for 2010 is unlikely to be met. Achieving this target in time would require an average annual increase of 2.05 percentage points in 2009 and 2010. This does not seem feasible given the current economic crisis, which has already led to a decrease in employment rate in the EU-27 for the last two quarters of 2008 and for the first quarter of 2009 <sup>(21)</sup>.

Figure 1.10 shows that the employment rate is the greater the higher the level of education attained. In 2007, more than four-fifths of 25 to 64 year olds with a tertiary level educational qualification were employed, but less than half of persons with lower secondary education. The employment rates within the three analysed education subgroups have remained almost constant over time. It is therefore likely that the increase of employment is at least partially due to shifts from lower to higher education.

**Figure 1.9: Total employment rate, EU-27 (%)**

Source: Eurostat (tsdec410)





**Figure 1.10:**  
Employment rate, by highest level of education attained, EU-27 (%)

Source: Eurostat (tsdec430)

Employment contributes to economic performance, quality of life and social inclusion. The renewed Lisbon Strategy, underpinned by the integrated guidelines 2005-2008, aims at setting out the appropriate responses to achieving higher growth potential and more and better jobs. Employment guideline 17 stipulates that employment policies should aim 'at achieving full employment, improving quality and productivity at work, and strengthening social and territorial cohesion', as well as 'contribute to achieving an average employment rate for the EU of 70 % overall by 2010', setting an intermediate target of 67 % for 2005.

Completed upper secondary education is considered as the minimum level required for successful participation in a knowledge-based society. These objectives are monitored by employment rates by educational attainment.

The employment rate is defined as the share of persons aged from 15 to 64 years in employment in the total population of the same age group. The employment rate by highest level of education attained is defined as the share of employed people within age group 25-64 years having attained a specific level of education in the total population of the same age group.

### Indicator relevance

### Definition





## Female employment



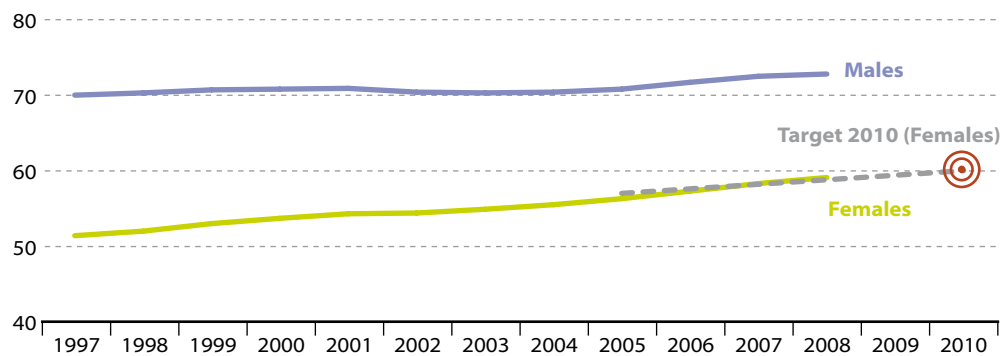
The gap between male and female employment continues to shrink. As a result the rate of female employment is well on track towards the target of 60 % female employment by 2010

**Analysis** Over the period from 2000 to 2008, female employment rose continuously, shrinking the distance from male employment. Interestingly, this convergence was stronger during 2005 to 2007, which were years of economic upturn, than when economic conditions were less favourable (2000 to 2003 and since 2008). In 2008, the female employment rate was 59.1 %, which was the second consecutive year above the theoretical linear target path. By 2008, 15 Member States had already exceeded the 60 % female employment target. Nevertheless, considerable differences remain among Member States with rates varying between 37.4 % and 74.3 %.

*Convergence to male employment strongest in economic upswing*

**Figure 1.11:**  
Employment rate  
by gender, EU-27  
(%)

Source: Eurostat  
(tsdec420)



**Indicator relevance** Under the Lisbon Strategy, Member States have pledged to encourage female labour market participation and achieve a substantial reduction in the employment gender gap by 2010 <sup>(22)</sup>. Achieving these objectives will essentially depend on the possibility for both women and men to strike a balance between their professional careers and their family lives. The promotion of quality of jobs and the fight against gender inequality are therefore important objectives of both the Lisbon Strategy and the EU Sustainable Development Strategy. Employment guideline 17 stipulates that employment policies should aim ‘at achieving full employment, improving quality and productivity at work, and strengthening social and territorial cohesion’, as well as ‘contribute to achieving an average employment rate for the European Union of at least 60 % for women by 2010’.

**Definition** The female employment rate is defined as the share of employed women aged from 15 to 64 years in the total female population of the same age group.



## Regional disparities in employment

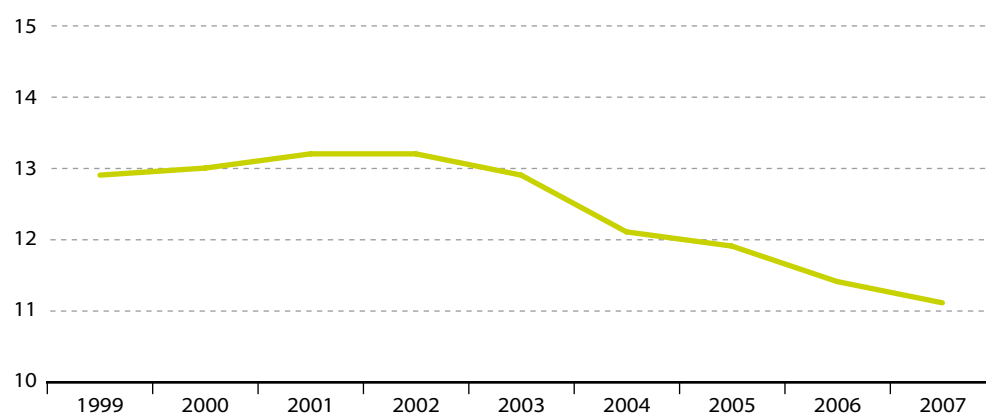
The dispersion of regional employment rates fell by nearly 2 percentage points between 2000 and 2007



The dispersion of regional employment grew slowly between 1999 and 2003 and then steadily decreased over the period from 2003 to 2007, which was characterised by favourable economic conditions. In 2007 the indicator stood at 11.1 %, which was 1.9 percentage points lower than in 2000. Over that period disparities were reduced in 12 of the 18 EU countries for which the indicator can be computed. In 2007, 17 of 18 Member States report dispersion of regional employment rates within their territories below the dispersion within the EU as a whole.

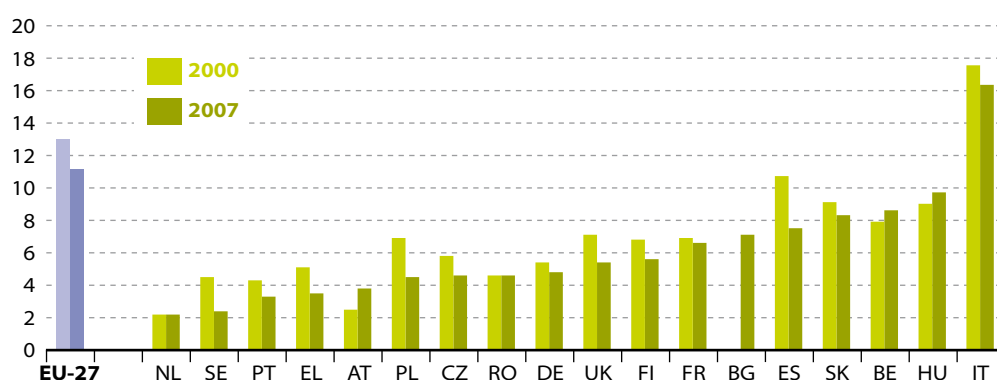
### Analysis

*Reduction of regional disparities falls together with economic upturn*



**Figure 1.12:**  
Dispersion of regional employment rates, EU-27  
(coefficient of variation, %)

Source: Eurostat (tsdec440)



**Figure 1.13:**  
Dispersion of regional employment rates, by country  
(coefficient of variation, %)

Source: Eurostat (tsdec440)

NB: As NUTS2 subdivisions do not exist in all countries, the indicator cannot be compiled for Denmark, Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta and Slovenia.



**Indicator relevance** Economic and social disparities among regions weaken the Union's overall dynamism. The fight against regional imbalances is an important goal of European policies and an objective of the EU Sustainable Development Strategy. The 2003 Brussels European Council demanded that the employment guidelines should address, *inter alia*, regional employment disparities <sup>(23)</sup>.

**Definition** The indicator is expressed as the coefficient of variation of regional employment rates of age group 15-64 at NUTS level 2. For a given country the dispersion of regional employment rates is defined as the square root of the weighted variance of regional employment rates divided by the employment rate at national (respectively, European) level. The dispersion of regional employment is zero when the employment rates in all regions are identical, and it rises if there is an increase in the differences between employment rates among regions.



## Unemployment

In line with the economic upturn, overall EU unemployment decreased between 2004 and 2008 and reached a lower level than in the previous economic cycle. Age and gender disparities were reduced, but they remain important issues of European social cohesion



Unemployment increased between 2001 and 2003 from 8.5 % to 9.0 %, lagging one year behind the economic downturn. No change was then observed for several years until it fell in 2006 and 2007 to slightly above 7 %. This level, which was maintained under the less favourable conditions of 2008, was well below the minimum attained over the previous economic cycle. However, in 2008 unemployment increased in 10 Member States, and the latest short-term figures for 2009 indicate that the EU unemployment rate has increased sharply (up to 8.6 % in April 2009) due to the effects of the economic crisis <sup>(24)</sup>.

Figures on unemployment by age group and gender show that the labour market situation is worst for young people (aged 15 to 24). In 2008, 15.4 % of economically active persons in that age group were unemployed. This share is twice as high as in the population as a whole. The unemployment rate also considerably differs between countries, ranging from 3 to 11 % in 2008.

In the EU-27 the unemployment rate of women favourably decreased by 2.3 percentage points from 9.8 % in 2000 to 7.5 % in 2008, but it still remains 1.1 percentage points higher than that of men. While male unemployment remained stable in 2008, female unemployment appeared to be less affected by the economic crisis and continued to decrease. However, the latest figures for female unemployment also show a sharp increase up to 8.3 % in March 2009.

### Analysis

*Unemployment follows economic cycle with a time lag*

*Young persons, women and low-skilled people hit most from unemployment*

*Female unemployment less affected by economic crisis*



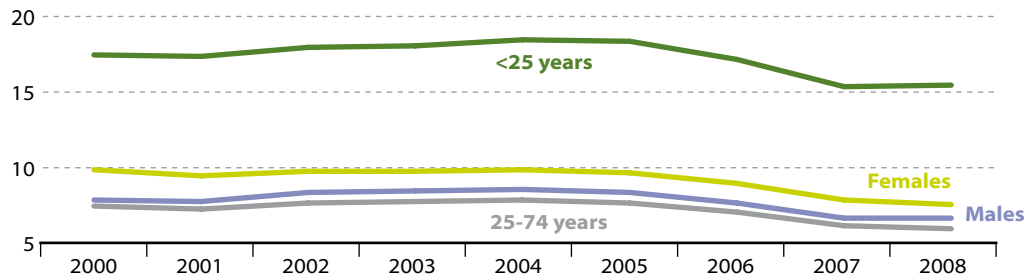
**Figure 1.14:**  
Total unemployment rate, EU-27 (%)

Source: Eurostat (tsdec450)



**Figure 1.15:**  
Unemployment  
rate by gender and  
age group, EU-27  
(%)

Source: Eurostat  
(tsdec450, tsdec460)



### Indicator relevance

Unemployment is considered to increase the risks of poverty and consequent social exclusion. EU policies and objectives are oriented towards the promotion of full employment and the increase in employment rates among vulnerable groups. In particular, there are objectives to improve the adaptability of workers and enterprises, the balance between flexibility and security, the efficiency of labour market policies and the performance of employment services. Tax-benefit systems particularly need to be designed in a way that they provide both protection from poverty and incentives to search for employment.

### Definition

The unemployment rate is defined as the number of unemployed persons as a percentage of the labour force. The labour force consists of all employed and unemployed persons in that age group. Unemployed persons comprise persons aged 15 to 74 who were (a) without work during the reference week, (b) currently available for work, i.e. available for paid employment or self-employment before the end of the two weeks following the reference week, (c) actively seeking work, i.e. had taken specific steps in the four-week period ending with the reference week to seek paid employment or self-employment, or who found a job to start later, i.e. within a period of, at most, three months.



## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### GDP (deflated)

The deflated GDP figures are based on the chain-linked methodology with reference year 2000.

When flows and stocks are valued at the price level in the accounting period they are said to be valued at *current prices*. Valuation at *constant prices* means valuing flows and stocks at the price of a previous period. The purpose of the valuation at constant prices is to assess the dynamics of economic development irrespective of price movements. This is achieved by decomposing changes of values over time into changes in prices and changes in volume. Price, value and volume are related by the equation:

$$\text{Value} = \text{Volume} \times \text{Price}$$

Flows and stocks at constant prices are hence said to be in volume terms. To improve the meaningfulness of volume data in view of rapidly changing price structures, Decision 98/715/EC lays down that the base year must be the previous year so that the base year is moving ahead with the observation period. A time-series of volumes is obtained by multiplying successive growth rates at previous year's prices starting from an arbitrary reference year's level. Due to its construction, this is called a chain-linked series. Unlike the choice for a fixed base year, the choice of reference year in chain-linking does not have any effect on growth rates.

### Growth of GDP per capita

Figures are collected from the national accounts departments of Member States' national statistical institutes. Data are expressed as growth rates in per cent. They are derived from data expressed in euro (or ecu prior 1999).

Per inhabitant figures are calculated based on the total population of a country on a given date, which consists of all persons, national or foreign, who are permanently settled in the economic territory of the country, even if they are temporarily absent from it. This means that total population is defined using the concept of residence rather than nationality. Population figures from national accounts may differ from those of population statistics.

Any GDP-derived measures for the European Union, such as GDP per inhabitant, GDP per capita growth, or labour productivity (see related indicators), are calculated directly from the European aggregates rather than from adequately weighing the derived measures for the Member States.

### Investment

Data are taken from national accounts which are compiled in accordance with the European system of accounts (ESA 95). Current price statistics expressed in euro (or 'ecu' prior to 1999) have been used to calculate the shares. Aggregate data for the EU are, in general, derived by adding the respective

Member State data, but some additional estimations or imputations have been required for the presentation of annual data.

The private sector consists of non-financial corporations, financial corporations, households and non-profit organisations serving households, i.e. all sectors of a national economy except general government which represents the public sector.

### Regional disparities in GDP

For a given country the dispersion of regional GDP at NUTS3 level is defined as the sum of the absolute differences between regional and national GDP per inhabitant, weighted with the regional share of population and expressed in percent of the national GDP per inhabitant.

Concerning geographical consistency, the sums of regional data usually coincide with the national data published in national accounts. However, national GDP data are more frequently updated than regional GDP. This means that there may be a difference between the national and/or European aggregates and the corresponding sums of the regions.

### Household saving

Figures are collected from national statistical institutes' national accounts departments. The basic statistics come from many sources, including administrative data from government, censuses, and surveys of businesses and households. The data are in current prices.

Households cover individuals or groups of individuals as consumers and possibly also as entrepreneurs producing market goods and non-financial and financial services (market producers) provided that, in the latter case, the corresponding activities are not those of separate entities treated as quasi-corporations. It also includes individuals or groups of individuals as producers of goods and non-financial services for exclusively own final use.

As regards data for the EU, the annual household saving rate is calculated on the basis of the European quarterly sector accounts. These European accounts are slightly wider than the data received from Member States as:

- missing countries are estimated by Eurostat;
- European institutions are included;
- intra-European flows and asymmetries between Member States are removed.

### Labour productivity growth

The hours worked represent the aggregate number of hours actually worked as an employee or self-employed during the accounting period, when their output is within the production boundary.

### Research and development expenditure

Gross domestic expenditure on research and experimental development data are collected through the annual



Eurostat R&D questionnaires and are calculated using current prices. The figures relating to GDP are compiled in accordance with ESA 95.

For some countries which attract significant foreign direct investment, the use of GDP as denominator restricts relevance as while these investments are visible in GDP and high-tech export figures for countries where investment is made, R&D work may be performed in investor countries and therefore may not be visible in R&D expenditure figures for the countries where the investment is made. Measurement problems may occur in the case of multinationals.

### Energy intensity

Gross inland energy consumption represents the quantity of energy necessary to satisfy the inland consumption of the geographical entity under consideration. It is the sum of gross inland consumption of solid fuels, liquid fuels, gas, nuclear energy, renewable energies, and other fuels. The gross inland consumption of an individual energy carrier is calculated by adding primary production and recovered products of energy together with total imports and withdrawals from stocks minus total exports and bunkers. It corresponds to the addition of consumption, distribution losses, transformation losses and statistical differences. It is measured in tonnes of oil equivalent.

### Employment and unemployment

The Labour Force Survey (LFS) is a quarterly household survey which provides data on persons aged 15 years and over living in private households. Its main emphasis is on employment, unemployment and inactivity. Conscripts, persons living in collective households (halls of residence, medical care establishments, religious institutions, collective workers' accommodation, hostels, etc.) and persons carrying out obligatory military service are not included. Only the employment of the residents in the country is considered. All sectors of the economy are covered.

The concepts and definitions used in the survey are based on those contained in the Recommendation of the 13th International Conference of Labour Statisticians, convened in 1982 by the International Labour Organization (referred to as the 'ILO guidelines'). To further improve comparability within the EU, Commission Regulation (EC) No 1897/2000, gives a more precise definition of unemployment. This definition remains fully compatible with the International Labour Organization standards. The economic active population comprises employed and unemployed persons.

The LFS divides the population of working age (15 years and above) into three mutually exclusive and exhaustive groups (persons in employment, unemployed persons and inactive

persons) and provides descriptive and explanatory data on each of these categories.

- Employed persons are persons aged 15 years and over (16 and over in ES, UK and SE before 2001; 15-74 years in DK, EE, HU, LV, SE, FI; 16-74 in IS and NO) who during the reference week performed work, even for just one hour a week, for pay, profit or family gain or were not at work but had a job or business from which they were temporarily absent because of, e.g., illness, holidays, industrial dispute or education and training.
- Unemployed persons are persons aged 15-74 (in ES, UK, IS and NO: 16-74) who (i) were without work during the reference week; (ii) were currently available for work before the end of the two weeks following the reference week; or (iii) were either actively seeking work in the past four weeks or had already found a job to start within the next three months.
- Inactive persons are those who neither classified as employed nor as unemployed.

The quarterly LFS is used for the calculation of both the employment and unemployment rates. Any missing quarter is estimated to produce the annual average.

The education data refer to the second quarter of each year until 2004, except FR and AT (quarter 1 all years). The level is coded according to the international standard classification of education (ISCED, 1997):

- pre-primary, primary and lower secondary education: levels 0-2;
- upper secondary and post-secondary non-tertiary education: levels 3-4;
- tertiary education: levels 5-6.

### Regional disparities in employment

Regional employment rates represent annual average figures and are taken from the European Union Labour Force Survey (see notes on 'Employment and unemployment'). Although the indicator cannot be compiled for Denmark, Ireland, Luxembourg, Cyprus, Estonia, Lithuania, Latvia, Malta and Slovenia because these countries comprise only one or (in the case of Ireland) two NUTS level 2 regions, the employment rates of these countries and of the two Irish regions are used to compute the dispersion of regional employment rates for the EU as a whole.

Persons living in institutional households (halls of residence, medical care establishments, religious institutions, collective workers' accommodation, hostels, etc.) and persons carrying out obligatory military service are not included. They represent on average less than 2% of the working age population.





## Chapter notes

- (1) Commission communication, *Working together for growth and jobs A new start for the Lisbon Strategy*, COM (2005) 24.
- (2) Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) — Renewed Strategy*, 10117/06.
- (3) Brussels European Council, Presidency conclusions, 19/20 March 2009, p.1.
- (4) Commission communication, *A European economic recovery plan*, COM(2008) 800.
- (5) Several EU-funded research projects, such as INDI-LINK, DECOIN, SMILE and IN-STREAM, are working on inter-linkages between sustainable development issues and indicators.
- (6) <http://www.ec.europa.eu/eurostat/structuralindicators>
- (7) Eurostat news release, Euro-indicators 82/2009, *Euro area GDP down by 2.5% and EU27 GDP down by 2.4%*, 3 June 2009.
- (8) Commission communication, *Third progress report on economic and social cohesion*, COM(2004) 107.
- (9) The indicator 'GDP per capita growth rate' as presented in this report is not comparable with the figures of the 2007 report due to a change in the method of deflation. See the methodological notes for further information.
- (10) Eurostat selected principal European economic indicators (PEEIs).
- (11) Commission communication, *Cohesion policy: investing in the real economy*, COM(2008) 876.
- (12) Regulation 176/2008 amending Regulation (EC) No 1059/2003 on the establishment of a common classification of territorial units for statistics (NUTS).
- (13) Commission Regulation (EC) No 1828/2006 of 8 December 2006 setting out rules for the implementation of Council Regulation (EC) No 1083/2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and of Regulation (EC) No 1080/2006 on the European Regional Development Fund.
- (14) Eurostat news release, Euro-indicators 110/2009, *Household saving rate at 15.6% in the euro area and 13.8% in the EU27*, 30 July 2009, table 2.
- (15) Commission communication, *Second Implementation Report on the 2003-2005 BEPGs*, COM(2005) 8; Timmer, M.P. and van Ark, B., 'Does information and communication technology drive productivity growth differentials? A comparison of the European Union countries and the United States', *Oxford Economic Papers*, 57(4), 2005, pp. 693-716.
- (16) The indicator 'Labour productivity' as presented in this report is not comparable with the figures of the 2007 report due to a change in the method of deflation. See the methodological notes for further information.
- (17) Organisation for Economic Co-operation and Development, *Main science and technology indicators*, Volume 2008/1, Paris, 2008.
- (18) Commission communication, *Energy efficiency in the European Community – Towards a strategy for the rational use of energy*, COM(1998) 246.
- (19) Brussels European Council, Presidency conclusions, 8/9 March 2007, Annex 1.
- (20) The indicator 'Energy intensity' as presented in this report is not comparable with the figures of the 2007 report due to a change in the method of deflation. See the methodological notes for further information.
- (21) Eurostat news release, Euro-indicators 86/2009, *Euro area and EU27 employment down by 0.8%*, 15 June 2009.
- (22) See also [http://ec.europa.eu/growthandjobs/index\\_en.htm](http://ec.europa.eu/growthandjobs/index_en.htm)
- (23) Brussels European Council, Presidency conclusions, 20 and 21 March 2003, p. 19.
- (24) Eurostat news release, Euro-indicators 79/2009, *Euro area unemployment up to 9.2%*, 2 June 2009.





# Climate change and energy

# 2

*'To limit climate change and its costs and negative effects to society and the environment'*

## Overview of main changes

Overall progress since 2000 in the 'climate change and energy' theme has been unfavourable, even if there are recent signs of improvement in several indicators.

Following a period of growth in EU-15 greenhouse gas emissions between 2000 and 2004, recent developments have been favourable, and emissions in 2007 stood 1.4 % lower than in 2000. Projections indicate that the Kyoto Protocol targets are within reach. The greenhouse gas intensity of energy consumption has increased, but at a modest pace.

Of the energy indicators, only combined heat and power has shown a favourable development. The consumption of renewables and biofuels as well as the share of renewables in electricity generation have increased but each at a pace which appears insufficient to reach their respective targets. Energy dependency has grown considerably since 2000, reaching about 55 % in 2008. The implicit tax rate on energy has fallen, which is inconsistent with the objective of shifting the tax burden from labour to resource use.

**Table 2.1: Evaluation of changes in the climate change and energy theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
		<b>Climate change</b>
☁ Greenhouse gas emissions*	: Greenhouse gas emissions by sector	☀☁ Greenhouse gas intensity of energy consumption
		: Global surface average temperature
		<b>Energy</b>
☁ Consumption of renewables	☁⚡ Energy dependency	☁ Gross inland energy consumption
		☁ Electricity generation from renewables
		☁ Consumption of biofuels in transport
		☀ Combined heat and power**
		☁ Implicit tax rate on energy

\* EU-15

\*\* From 2004

**LEGEND:**

☀ clearly favourable change/on target path

☁ moderately unfavourable change/far from target path

☀☁ no or moderately favourable change/close to target path

☁⚡ clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data

### Headline indicator

*Progress in reducing greenhouse gas emissions has been slow since 2000, but trends are projected to become favourable*

EU-15 greenhouse gas emissions in 2007 stood 5 % below their Kyoto base year value, and although remaining above the 8 % reduction required by Kyoto between 2008 and 2012 are moving towards it. Since 2004 the evolution has been favourable, resulting in an overall decrease of 1.4 % for the EU-15 between 2000 and 2007. According to the projections compiled by the European Environment Agency the Kyoto target should be reached with existing policies and measures, including the use of carbon sinks. With additional policies and measures, and use of the so-called 'Kyoto mechanisms' <sup>(1)</sup>, the EU-15 is projected to overachieve its target.

EU-27 emissions, for which there is no Kyoto target, were virtually the same in 2007 as in 2000. Following the considerable progress achieved in reducing greenhouse gas emissions by eastern European Member States during the 1990s, emissions rose in the first years of the decade but have fallen steadily since 2004, so that in 2007 EU-27 emissions were 12.5 % below their base year level.

*Slow progress in the uptake of renewable sources*

Despite increases in the consumption of renewable energies in the EU-27 since 2000, their share in inland energy consumption has not grown sufficiently to be on the target path. Biomass is by far the most important renewable energy source, delivering almost 70 % of the total renewable energy in 2007 and having the fastest growing share. Hydro power, the second most important renewable energy source, has decreased its share over recent years. Wind and geothermal sources are still minor contributors, although in absolute terms are increasing rapidly.

### Climate change

*Growing energy industry and transport emissions*

Although emissions from most sectors decreased between 2000 and 2007, emissions from energy industries and transport, the two biggest emission sources, increased, thereby offsetting some of the reductions achieved elsewhere.

Even if emissions from the energy industry have increased, due to switching to lower carbon fuels the greenhouse gas intensity of energy consumption has decreased, albeit at a slower pace than in the 1990s.

*Modest decline in GHG intensity of energy consumption*

The global surface average temperature was 0.7 °C higher in 2008 than 150 years ago, although there are indications that over the past decade the rate of global temperature rise has slowed down.

### Energy

*EU is dependent on imports for more than half of its energy*

EU-27 dependence on imported energy remained rather constant during the 1990s at around 45 %. Since 2000, the level of energy dependency has risen steeply, exceeding 50 % in 2004, and reaching around 55 % in 2008.

*Energy demand has slightly increased*

The EU's energy demand has slightly grown. Between 2000 and 2007 EU-27 energy consumption grew faster than in the previous decade, although since 2003 it has levelled off. There has been a general shift away from solid fuels towards natural gas and to some extent renewable energies.

*Share of renewable electricity needs faster growth to reach target*

The share of renewables in EU-27 electricity production grew from 13.8 % in 2000 to 15.6 % in 2007, but remains below the path to the 21 % target set for 2010.

*The share of biofuels remains small but is rapidly growing*

The share of biofuels in transport remains small but is growing rapidly. Their consumption has shown accelerated growth since 2000, and they represented 2.6 % of transport fuels in 2007 in EU-27. Although this share is still below the target path, if the recent rate of growth continues the target is attainable.

The development of cogeneration or combined heat and power (CHP), a technology which combines the production of useful heat with electricity generation, has been relatively slow. The EU-27 share in gross electricity generation increased only slightly, by 0.2 percentage points per year between 2004 and 2007. CHP delivered 10.9 % of gross electricity generation in 2007.

*Modest progress in combined heat and power generation*

The implicit tax rate on energy for the EU-27 has been decreasing since 1999. This decrease in the effective tax burden could be seen as inconsistent with the objective of shifting taxation from labour onto resource and energy consumption, although there are indications that taxation may have played a role in stimulating energy conservation. Furthermore there is greater reliance on policy instruments other than taxes, such as emissions trading, and energy taxes were reduced to compensate for the substantial rise in the oil price over recent years.

*Implicit tax rate has been declining*

## Background

Although energy policy has always been of central importance to the EU, its focus has shifted and evolved over the past 50 years. Initially the main concerns were the creation of a single market in coal and cooperation in the field of nuclear energy. However, the oil crisis of the 1970s demonstrated the need for coordinated action to stabilise prices and supplies. Since then the issues of energy saving, renewables, harmonisation of taxes on oil products, and the development of a trans-European energy distribution network have been agreed at Community level. Environmental policy has also treated energy-related issues such as pollutant emissions resulting from energy use. The two issues of major current concern, climate change and security of supply, both require action at the international and global level. As a result, the need for a common EU energy strategy has become apparent.

Climate change is a major preoccupation both for politicians and the general public. There is a wide consensus amongst scientists that increases in the average temperature of the Earth over the last 250 years are largely due to greenhouse gas (GHG) emissions resulting from human activities, in particular the burning of fossil fuels. An increase in the Earth's average temperature by more than 2 °C above pre-industrial levels could have severe consequences for the environment, the economy and human society itself <sup>(2)</sup>.

*Climate change is one of the greatest challenges for our planet*

The potential impacts of climate change are wide ranging, and include altered weather patterns, changes in agricultural yields, loss of biodiversity and other changes in ecosystems, water and food shortages, floods, heat waves, and novel diseases. All countries of the World are likely to be affected, although to differing degrees, and some of the consequences are already visible. To limit these consequences, it is necessary to make substantial cuts in GHG emissions. Based on the best estimates of the Intergovernmental Panel on Climate Change (IPCC), in order to keep the increase in average temperature below the 2 °C threshold, by 2050 global emission reductions need to be in the range of 50-85 % of their levels in 2000 <sup>(3)</sup>.

*GHG reductions targets are set by the Kyoto Protocol. Negotiations are under way to agree on post-Kyoto framework*

The Kyoto Protocol to the United Nations Framework Convention on Climate Change is currently the only international instrument that sets binding reduction targets for GHG emissions. According to the Protocol, over the period 2008 to 2012 the average emissions of the developed countries should have fallen by 5.2 % relative to their 1990 levels. Negotiations are underway to agree on the future regime after this period.

In addition to climate change, the EU faces a number of other challenges in its energy sector. Energy production is responsible for other environmental impacts, such as air pollution and consumption of land. Moreover, the environment is not the only concern of the energy sector. As the renewed Sustainable Development Strategy states, energy policy should also be consistent with the objectives of supply security and competitiveness, as illustrated by the energy

*The energy sector faces multiple challenges*

crisis into which Europe was plunged after supplies of natural gas from Russia were cut in the winter of 2008/09. The EU's energy objectives include reducing its dependence on energy imports, in particular through improving energy efficiency and increasing the contribution of renewable energies, but also through establishing reliable energy supply partnerships and contracts. In order to move towards a secure and sustainable energy future, the EU intends to transform itself into a low-carbon, less energy-intensive economy.

**Major new policy developments in the climate change and energy matter**

In the light of the above the Climate and Energy Package aims to cut greenhouse gas emissions and energy consumption and to reduce the EU's dependence on foreign energy sources. The EU is committed to reducing its GHG emissions by at least 20 % below 1990 levels by 2020, and, if other developed countries commit to comparable efforts, is ready to scale up this reduction to as much as 30 % under a new global climate change agreement. Central to the strategy is a strengthening and expansion of the European Emission Trading System (EU ETS). Emissions from the sectors included in the EU ETS will be cut by 21 % by 2020 compared with 2005 levels, while emissions from sectors not included in the EU ETS – such as transport, housing, agriculture and waste – will be reduced by 10 % from 2005 levels by 2020. Each Member State will contribute to this effort according to its national circumstances, with national legally binding emission targets ranging from -20 % to +20 % <sup>(4)</sup>. The package also includes mandatory targets to increase the share of renewable energies in energy use to 20 % by 2020, also differentiated according to Member States' capabilities. The package also promotes the development and safe use of carbon capture and storage technologies, so that CO<sub>2</sub> may be captured and stored underground.

Emission cuts for transport will be delivered by legislation aimed at reducing the CO<sub>2</sub> emissions from new cars to an average of 120 grams per km, to be phased in between 2012 and 2015, and to further reduce to 95 grams per km by 2020 <sup>(5)</sup>. This measure alone should contribute more than one-third of the emission reductions required in the non-ETS sectors. In addition the Fuel Quality Directive has recently been revised <sup>(6)</sup>, and will require fuel suppliers to reduce greenhouse gas emissions from the fuel production chain by 6 % by 2020.

**Box 2.1: Objectives related to Climate change and clean energy in the Sustainable Development Strategy**

Overall objective: To limit climate change and its costs and negative effects to society and the environment

Operational objectives and targets:

- Kyoto Protocol commitments of the EU-15 and most EU-25 to targets for reducing greenhouse gas emissions by 2008 – 2012, whereby the EU-15 target is for an 8 % reduction in emissions compared to 1990 levels. Aiming for a global surface average temperature not to rise by more than 2°C compared to the pre-industrial level.
- Energy policy should be consistent with the objectives of security of supply, competitiveness and environmental sustainability, in the spirit of the Energy Policy for Europe launched in March 2006 by the European Council. Energy policy is crucial when tackling the challenge of climate change.

- Adaptation to, and mitigation of, climate change should be integrated in all relevant European policies.

- By 2010 12 % of energy consumption, on average, and 21 % of electricity consumption, as a common but differentiated target, should be met by renewable sources, considering raising their share to 15 % by 2015.

- By 2010 5.75 % of transport fuel should consist of biofuels, as an indicative target, (Directive 2003/30/EC), considering raising their proportion to 8 % by 2015.

- Reaching an overall saving of 9 % of final energy consumption over 9 years until 2017 as indicated by the Energy End-use Efficiency and Energy Services Directive.

## Potential linkages

Issues within the climate change and energy theme are closely interrelated, and there are also strong links to other themes.

The combustion of fossil fuels is a major source of greenhouse gas emissions. At the same time, since the EU does not possess sufficient reserves of fossil fuels to meet its own energy demand, continued reliance on fossil fuels leads to dependence on third country sources, and security of supply issues.

*Consumption of fossil fuels leads to GHGs and energy dependency*

Since producing energy from renewable sources results in negligible greenhouse gas emissions, and since such sources can originate either within the EU or in a wide range of third countries, renewables contribute to the two major objectives of limiting climate change and assuring the security of energy supplies.

Complementary to the diversification of energy sources is the reduction of demand. This can be achieved by promoting energy saving and efficiency on the one hand, for example through the cogeneration of heat and power, and imposing tax on energy consumption on the other hand.

Climate change can also impact on the energy sector. The generation of hydroelectricity is affected by changes in patterns of rainfall. When winters are milder less heating is necessary, and when summers are hotter there is more demand for air-conditioning. Moreover new weather patterns can also be less or more favourable for producing biomass for electricity or biofuels. Melting sea ice could also increase the feasibility of extracting fossil fuels from previously inaccessible reserves.

The White Paper on adaptation <sup>(7)</sup> provides an exhaustive description of the linkages between climate change and other areas. They include designing policies and infrastructure investments, managing waters and forests, preparing for change in crop yield and spread of new diseases. Since energy is used in virtually every economic activity, climate change and energy policies have an impact on a wide range of social, environmental and economic aspects. At the same time, some of the climate change mitigation measures have broader positive impacts such as the improvement of air quality. Reducing emissions through renewable energies and energy saving has not only the potential to cut energy costs but also to create new jobs and increase industrial competitiveness.

*Linkages with other themes and issues*



### Further reading

Commission communication, *20 20 by 2020: Europe's climate change opportunity*, COM(2008) 30

Commission communication, *An energy policy for Europe*, COM(2007) 1

Commission communication, *Energy efficiency: delivering the 20 % target*, COM(2008) 772

Commission Staff Working Document, *The renewable energy progress report*, SEC(2009) 503

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## Greenhouse gas emissions

Between 2000 and 2007 EU-15 greenhouse gas emissions have remained above the target path. However, since 2004 emissions have reduced appreciably and are moving towards the target

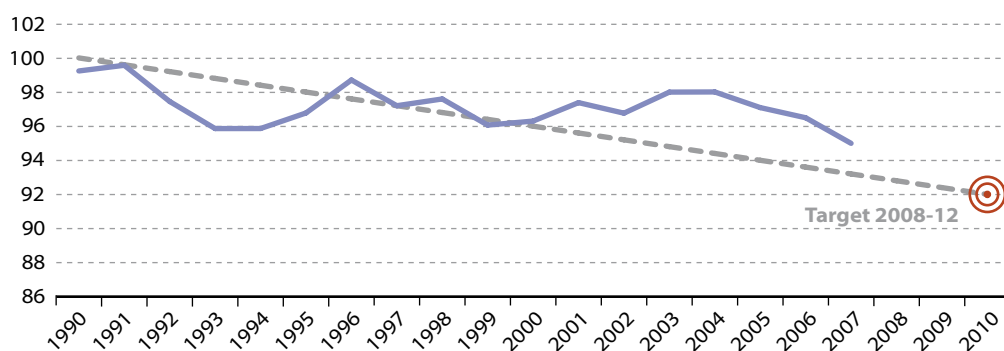


Between 1990 and 2007, the EU-15 reduced greenhouse gas emission by 5.0 %; leaving it 3 percentage points from its reduction target for 2008-12. Although emissions rose during the first few years of the century, they have been decreasing since 2004. Overall, between 2000 and 2007, emissions decreased, but at a somewhat slower rate than over the previous decade.

According to the projections compiled by the European Environment Agency<sup>(8)</sup> the Kyoto target should be reached with existing policies and measures, including the use of carbon sinks. With additional policies and measures and use of the so-called 'Kyoto mechanisms' the EU-15 is projected to overachieve its target.

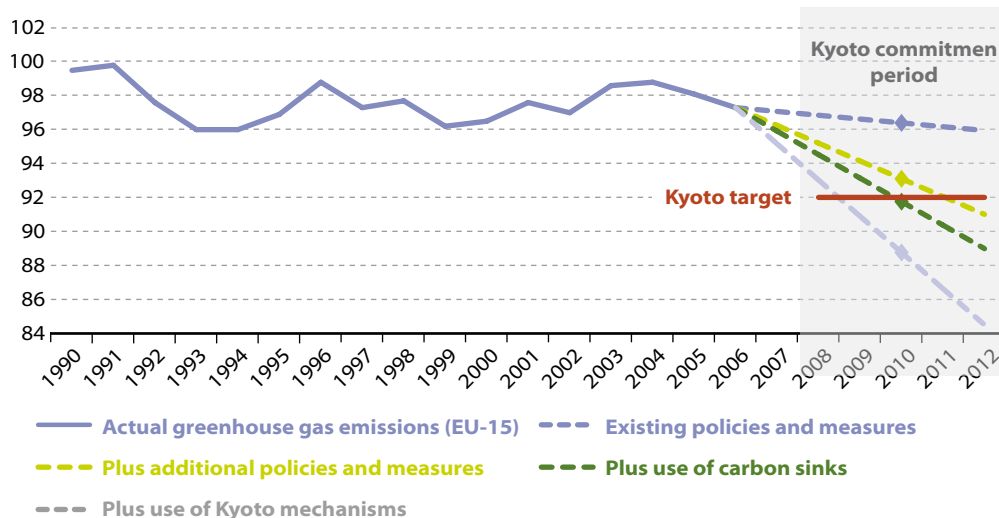
### Analysis

*Although EU greenhouse gas emissions grew over the period from 2000 to 2004, the trend over the last three years has been favourable*



**Figure 2.1:** Greenhouse gas emissions, EU-15 (index Kyoto base year=100)

Source: European Environment Agency, Eurostat (tsdcc100)



**Figure 2.2:** Greenhouse gas emissions and projections, EU-15 (index Kyoto base year=100)

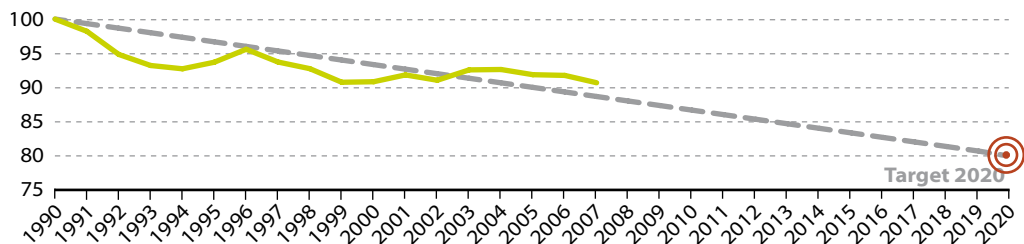
Source: European Environment Agency

NB: The projections are based on emission estimates up to 2006.

In addition to the Kyoto Protocol commitment for EU-15, the EU as a whole is committed to achieving at least a 20 % reduction of its greenhouse gas emissions by 2020 compared to 1990 levels. In EU-27 emissions were 12.5 % lower than their base year level, but the major part of these reductions were made prior to 2000. Emissions in 2007 remained at virtually the same level as in 2000. According to the projections compiled by the European Environment Agency, the EU-27 is not likely to reach the 20 % reduction target by 2020. However, most Member States have not yet had sufficient time to take the effects of the EU Climate Change and Energy Package into account for preparing their projections.

**Figure 2.3:**  
Greenhouse gas emissions, EU-27  
(index base year 1990=100)

Source: European Environment Agency

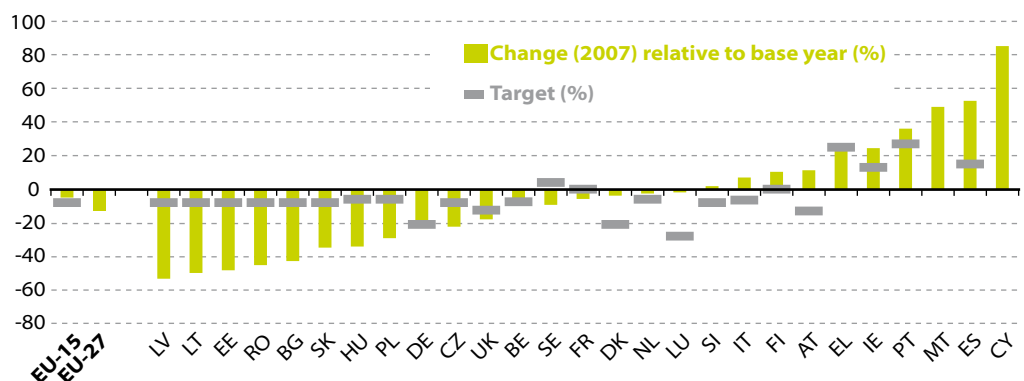


**The country breakdown shows a mixed picture towards targets**

Overall, these figures reflect two distinct trends within the EU. On the one hand there was a modest reduction of greenhouse gas emissions in the EU-15, dominated by significant reductions in Germany (restructuring and fuel switching following unification) and the UK (fuel switching in electricity generation) which were offset by increases of greenhouse gas emissions in other Member States and in some source sectors, such as transport. On the other hand, greenhouse gas emissions in the Member States who joined the EU in 2004 and 2007, with the exception of Cyprus and Malta, decreased considerably between 1990 and 2007. Some of these Member States increased their emissions considerably between 2000 and 2007 but will nonetheless over-achieve their targets under the Kyoto Protocol. Others have been able to stabilise their emissions at their previous low levels.

**Figure 2.4:**  
Percentage change in greenhouse gas emissions up to 2007 since the base year (%)

Source: European Environment Agency



NB: Changes for CY and MT compared to 1990 levels.

**Indicator relevance**

There is wide scientific consensus that emissions of greenhouse gases are responsible for global warming, with potentially dramatic economic, social and environmental consequences at global level.

All Member States have reduction targets under the Kyoto Protocol, with the exception of Cyprus and Malta. Eastern European Member States have individual targets with reduction



requirements ranging from 6 % to 8 %. The EU-15 agreed to a collective 8 % reduction of its greenhouse gas emissions by 2008-12, compared with the emissions in the so-called 'base year'. To meet this EU-15 reduction target, individual targets for each country have been agreed under the so-called EU 'Burden Sharing Agreement'.

This indicator shows trends in man-made emissions of the six greenhouse gases regulated by the Kyoto Protocol (the so called 'Kyoto basket'): carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and the so-called F-gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (SF<sub>6</sub>)). Each gas is weighted by its global warming potential and aggregated to give total greenhouse gas emissions in CO<sub>2</sub> equivalents. The indicator presents annual total emissions as a share of the base year emissions. Emissions and sinks related to land use, land-use change and forestry are excluded.

## Definition

## Consumption of renewables



From 2000 to 2007, the share of renewable sources in energy consumption in the EU-27 did not grow in line with the target path

### Analysis

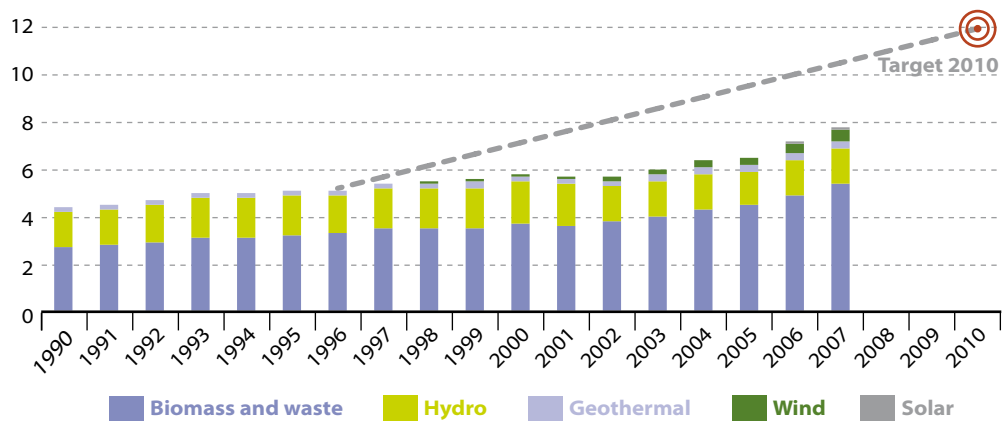
*Consumption of renewables has grown over the last decade but the share remains far from the target*

During the 1990s the consumption of renewable energies in the EU-27 increased significantly and has continued to grow between 2000 and 2007. This resulted in a share of 7.8 % in 2007 which remains, however, substantially below the 12 % target for 2010. Even if the highest annual change of 8.3 % between 2006 and 2007 continued, the share of renewables would remain below the target.

Biomass is by far the most important renewable energy source, delivering almost 70 % of the total renewable energy in 2007 and having the fastest growing share. Hydro power is second in importance even though both its share and its absolute contribution have diminished between 2000 and 2007 due to a series of several very dry years. Wind and geothermal are still minor contributors and, although their absolute growth rates are increasing rapidly, their shares are only growing slowly.

**Figure 2.5:** Share of renewables in gross inland energy consumption, EU-27 (%)

Source: Eurostat (tsdcc110)



NB: Provisional values for 2001 and 2002.

The proportion of renewables in gross inland energy consumption in 2007 varied widely between Member States. It ranged from 2.1 % in the UK to 29.7 % in Latvia and 30.9 % in Sweden, reflecting differences in resource base, mainly in respect to hydropower capacity and availability of biomass.

Biomass is the predominant renewable source, across all Member States, representing 5.4 % of EU-27 consumption in 2007. It provides 24.6 % of the gross inland energy consumption in Latvia, 19.3 % in Finland and 19.4 % in Sweden. Most of this is wood. In six Member States more than 90 % of renewable energy is derived from biomass. It is also the fastest growing share amongst renewable sources, due to the fact that biomass can be used in all three end-use sectors: power generation, transport and heating.

Second in overall importance is hydropower, which, however, not only decreased its share from 1.8 % to 1.5 % over the period 2000 to 2007 due to several very dry years, but also decreased in absolute terms. Wind and geothermal, whose shares have been growing at a very modest pace, are still relatively minor sources, together representing only 0.8 % of EU-27 energy consumption in 2007. In absolute terms, however, wind power capacity has been growing rapidly. It is now a significant renewable energy source in Spain, Denmark and Germany, where it makes up 22 %, 17 % and 12 % of renewables, respectively. Geothermal, generally another minor source, is the most important renewable energy source in Italy, where it represented 39 % of renewable energy in 2007. Solar energy remains the least important of all renewable energies in terms of its contribution. It represents 0.1 % of EU-27 gross inland energy consumption and 1.2 % of renewables, but its growth in absolute terms is impressive and solar energy constitutes an important renewable energy source in Cyprus and, to a lesser extent, in Greece with shares of 83 % and 10 % of total renewable energy.

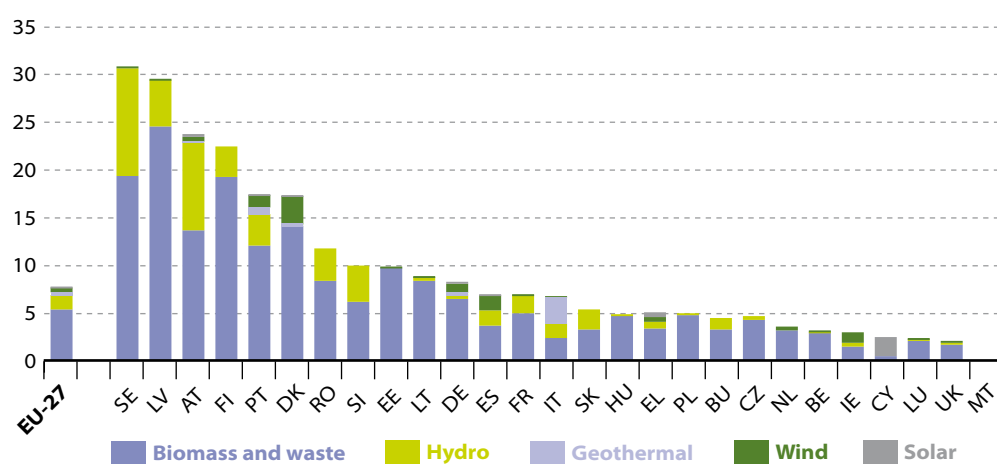


Figure 2.6: Share of renewables in gross inland energy consumption, by country, 2007 (%)

Source: Eurostat (tsdcc110)

Measures aimed at reducing the growth in gross inland energy consumption, for example through energy savings and improving energy efficiency, will also influence the growth rate of this indicator.

Renewable energy sources are important for reducing the EU's dependence on imported fossil fuels and cutting greenhouse gas emissions and other pollutants. In addition, a more mature market for renewable energy technologies is expected to bring about a number of social and economic benefits, including regional and local development opportunities, export opportunities and employment.

Two targets with different time horizons guide the EU effort to expand renewable capacity: the 1997 White Paper's <sup>(9)</sup> goal to double the use of renewables in the European Union from 6 to 12 % between 1996 and 2010, and the 20 % renewables target for 2020 established in the recent Directive on the promotion of renewable energy <sup>(10)</sup>. The 2010 target is set as percentage share of renewables in gross inland energy consumption. The 2020 target is defined as share of energy from renewable sources in gross final consumption and will require a different indicator <sup>(11)</sup>.

## Indicator relevance



Unlike the indicative target set for 2010, the 20 % target set for 2020 is binding for all Member States. An effort sharing agreement regulates how much each Member State needs to contribute, with the target depending on the Member State's current share of renewables, its resource base and its wealth. National targets range from 10 % for Malta up to 49 % for Sweden.

**Definition**

The indicator is defined as the share of renewables in gross inland energy consumption. It is split into the major energy sources (see methodological notes).

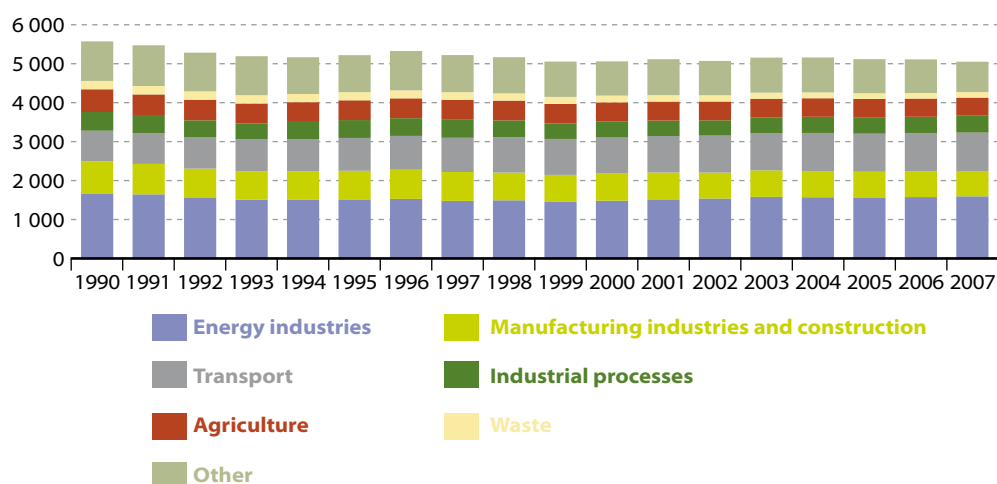


## Greenhouse gas emissions by sector

Greenhouse gas emissions decreased in most source categories between 2000 and 2007, but energy industries and transport, the two biggest emitting categories, increased their emissions, thereby offsetting some of the reductions achieved elsewhere

Energy-related emissions represented approximately 80 % – by far the largest share – of total emissions in 2007. The largest emitting source category was the energy industries, which accounted for about 40 % of energy-related emissions, followed by transport, accounting for a further 24 % of energy-related emissions.

Between 2000 and 2007, greenhouse gas emissions produced by energy industries increased by 7.5 % in the EU-27 while energy consumption increased by 8.3 % over the same period. Greenhouse gas emissions from transport, which represented about one-fifth of all EU-27 greenhouse gas emissions in 2007, increased by 7 % in the same period. These two source categories have offset some of the emission decreases achieved elsewhere.



### Analysis

*Greenhouse gas emissions from energy industries and transport offset much of the emission decreases achieved by other sectors*

**Figure 2.7:** Greenhouse gas emissions, by sector, EU-27 (million tonnes CO<sub>2</sub> equivalents)

Source: European Environment Agency, Eurostat (tsdcc210)

Greenhouse gas emissions from industrial processes (CO<sub>2</sub>, nitrous oxide and fluorinated gases) in the EU-27 grew slightly between 2000 and 2007, although the 2007 level was still 9.9 % below that of 1990. Emissions from non-energy-related industrial processes are mainly CO<sub>2</sub> from cement production, iron and steel production, nitrous oxide from nitric acid production, and hydrofluorocarbons from refrigeration and air conditioning equipment.

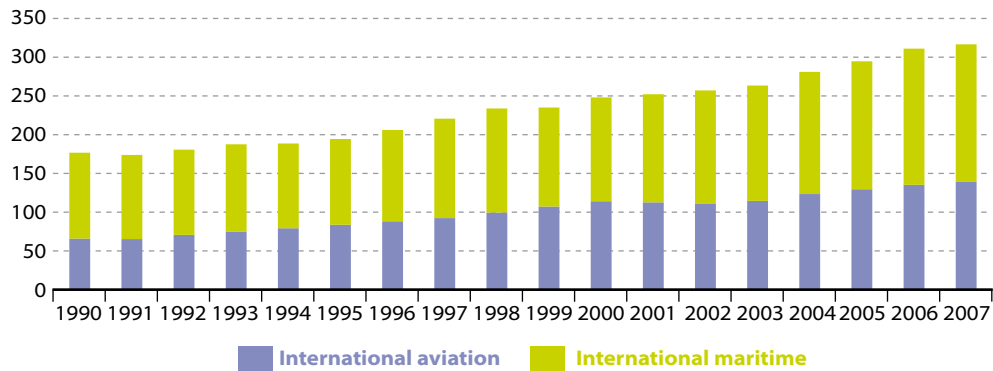
Other sectors saw decreases. Agricultural emissions fell by 5.7 %. Emissions in the manufacturing industry and construction dropped by 3.5 %.

Emissions from international bunkers account for a relatively small but rapidly growing proportion of greenhouse gas emissions. EU-27 GHG emissions from international aviation and maritime transport have increased by 109.7 % and 60.2 %, respectively, between 1990 and 2007.

*EU-27 emissions from industrial processes have been growing, but remained about 13 % below the 1990 level in 2006*

**Figure 2.8:**  
Emissions from  
international  
bunkers, EU-27  
(million tonnes CO<sub>2</sub>  
equivalents)

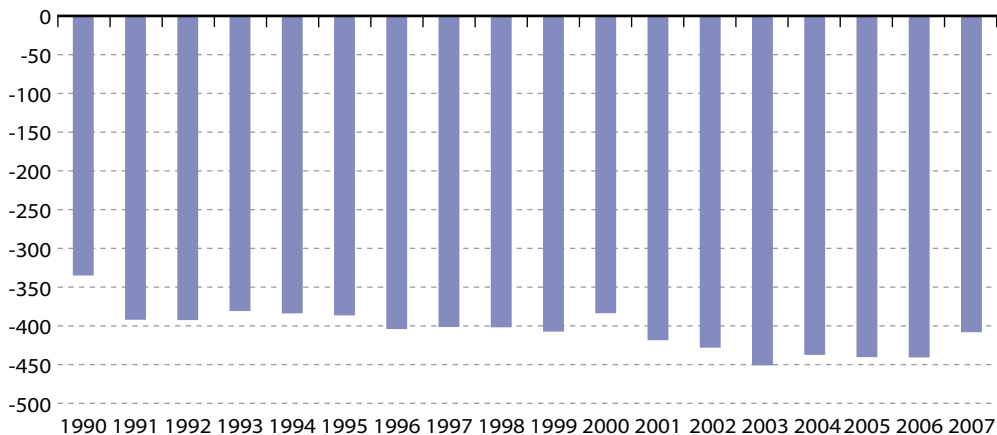
Source: European  
Environment Agency



Patterns of land use, land-use change and practices in the forestry sector (LULUCF) can offset emissions, either by removing greenhouse gases from the atmosphere (e.g. by planting trees or improving forest management) or by reducing emissions (e.g. by curbing deforestation). On average 425 million tonnes of CO<sub>2</sub> were removed annually between 2000 and 2007 in the EU-27, which is rather higher than was achieved over the previous decade.

**Figure 2.9:**  
Emissions from  
land use, land  
use change and  
forestry, EU-27  
(million tonnes CO<sub>2</sub>  
equivalents)

Source: European  
Environment Agency



### Indicator relevance

Different emission sources related to different sectors of the economy, such as energy production, transport, construction or agriculture, contribute by varying extents to total greenhouse gas emissions. By monitoring trends by sector, the indicator makes it possible to evaluate the effectiveness of measures implemented to cut greenhouse gas emissions. The indicator also highlights those sectors where further action may be needed.

### Definition

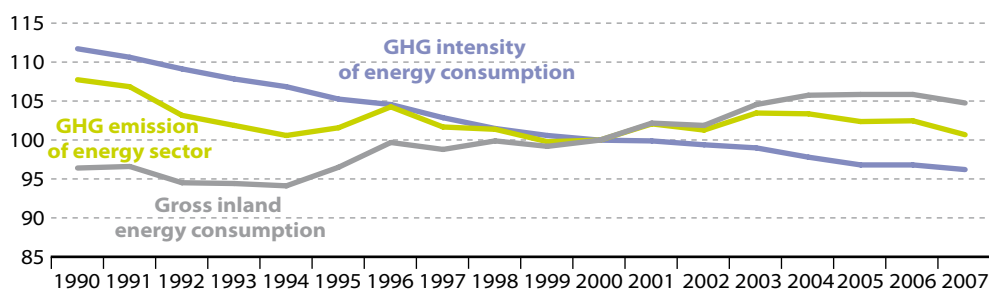
This indicator shows the contribution of the key source categories to total greenhouse gas emissions, and how they change over time. A key source category is defined as an emission source category that has a significant influence on a country's greenhouse gas inventory in terms of the absolute level of emissions, the trend in emissions, or both. The different greenhouse gases are weighted by their global warming potential, and the results are expressed in CO<sub>2</sub> equivalents.

## Greenhouse gas intensity of energy consumption

Between 2000 and 2007 moderate progress was made in reducing the greenhouse gas emissions per unit of energy consumption



In the EU-27, the greenhouse gas intensity of energy consumption decreased by an average annual rate of about 0.6 % between 2000 and 2007, mainly due to the switching from solid fuels to gas and, to a lesser extent, to nuclear energy and renewable energies (see also indicator 'Gross inland energy consumption'). However, the decrease was not as strong as in the 1990s when the emission intensity of energy consumption decreased by an annual average of 1.1 %.



### Analysis

*The greenhouse gas intensity of energy consumption fell at a slower rate than during the 1990s*

**Figure 2.10:** Greenhouse gas emissions intensity of energy consumption, EU-27 (index 2000=100)

Source: European Environment Agency, Eurostat(tsdcc220)

Each type of fossil fuel contains a different amount of carbon for each unit of produced energy; the switch to lower- or low-carbon content fuels is an important measure for achieving a number of objectives of the EU SDS. High carbon-content fuels include lignite and coal, whilst natural gas is a relatively low-carbon fuel. Switching to lower carbon fuels and to renewable sources reduces greenhouse gas emissions even without reducing overall energy consumption.

### Indicator relevance

The greenhouse gas intensity of energy consumption is the ratio between energy related greenhouse gas emissions (carbon dioxide, methane and nitrous oxide) and gross inland energy consumption.

### Definition

## Global surface average temperature

The global average temperature in 2008 was 0.7 °C higher than a century and a half ago

### Analysis

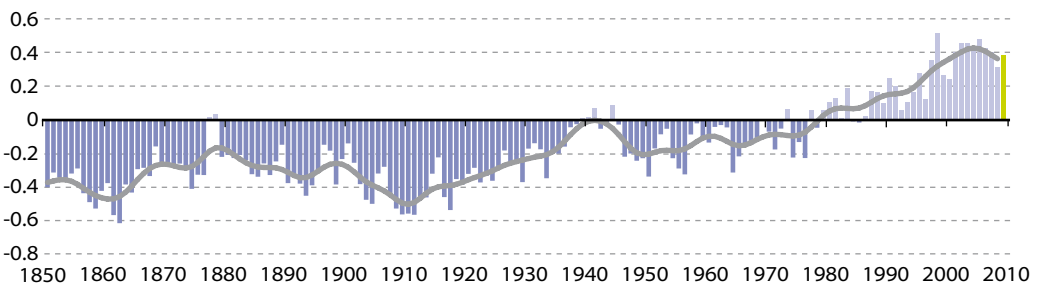
The year 2008 was among the ten warmest on record since systematic instrumental measurements began in around 1850, although slightly cooler than previous years of this century.

*The global surface average temperature increased by 0.7 °C over the last century*

According to the World Meteorological Organization <sup>(12)</sup> 'since the beginning of the twentieth century, the global average surface temperature has risen by 0.74 °C, although this increase has not been continuous. The linear warming trend over the past 50 years (0.13 °C per decade) is nearly twice that for the past 100 years'. Nevertheless, there are indications that over the past decade the global temperature rise has slowed down <sup>(13)</sup>.

The Intergovernmental Panel of Climate Change (IPCC) consider that 'there is high agreement and much evidence that with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades'. According to all of its scenarios, the IPCC projects that the rise in temperature over the 21st century will very likely be larger than the rise over the 20th century <sup>(14)</sup>.

**Figure 2.11: Global annual mean temperature deviations, 1850-2008 (temperature deviation in °C, compared to 1961-1990 average)**



Source: Climatic Research Unit, University of East Anglia and the UK Met. Office Hadley Centre

NB: Data for 2009 based on provisional annual average.

### Indicator relevance

According to the IPCC's Fourth Assessment Report <sup>(15)</sup>, 'warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level'. An objective of the EU SDS is to limit the rise in the global surface average temperature to less than 2 °C compared to the pre-industrial level.

The indicator is contextual due to its weak EU policy responsiveness and because it is unable to monitor the precise temperature deviation from the 'pre-industrial' era, defined by IPCC as 1750.

### Definition

The indicator shows the combined global land and marine surface temperature record from 1850 onwards, in terms of the temperature deviation from the average 1961 to 1990 in degrees Celsius.

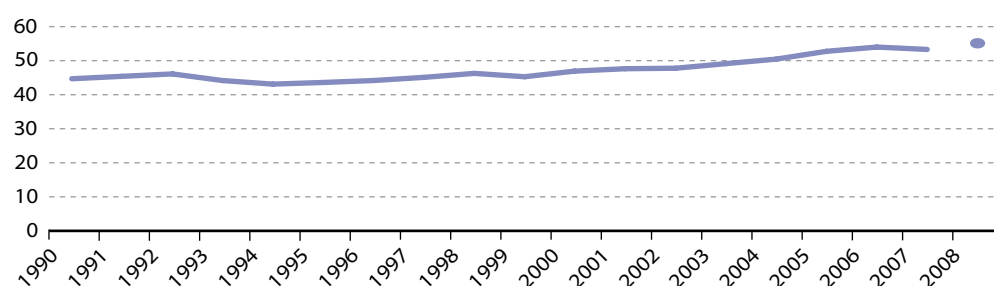
## Energy dependency

EU-27 energy dependency has risen steeply since 2000 and the level of around 55 % in 2008 is significantly higher than during the 1990s



Energy dependency shows the extent to which an economy relies upon imports in order to meet its energy needs. Despite annual fluctuations, EU-27 dependency on imported energy remained rather constant throughout the 1990s, at a level of around 45 %. Since 2000, however, the level of dependency has grown, exceeding 50 % in 2004 and reaching a level of about 55 % (based on provisional data) in 2008. This represents a degree of dependence 10 percentage points higher than the average of the previous decade.

Apart from the growing demand for energy, the larger share of natural gas which is imported from outside the European Union and declining oil reserves in the North Sea have contributed to this development.



### Analysis

*More than half of EU energy is imported*

**Figure 2.12:**  
Energy dependency, EU-27 (%)

Source: Eurostat (tsdcc310)

NB: Provisional value for 2008 based on monthly data.

With both energy demand and dependency on oil and gas imports growing and supplies becoming scarcer, the risk of supply failure is rising. Securing energy supplies is therefore high on the EU's agenda. The security of energy supply is an objective of the Sustainable Development Strategy and of the EU Climate and Energy Package and is the focus of the second strategic energy review <sup>(16)</sup>.

### Indicator relevance

Energy dependency is calculated as net imports divided by the sum of gross inland energy consumption and maritime bunkers.

### Definition

## Gross inland energy consumption



The EU's energy demand has grown moderately. Between 2000 and 2007 EU-27 energy consumption grew faster than in the previous decade, although since 2003 it has levelled off. There has been a general shift away from solid fuels towards natural gas and to some extent renewable energies

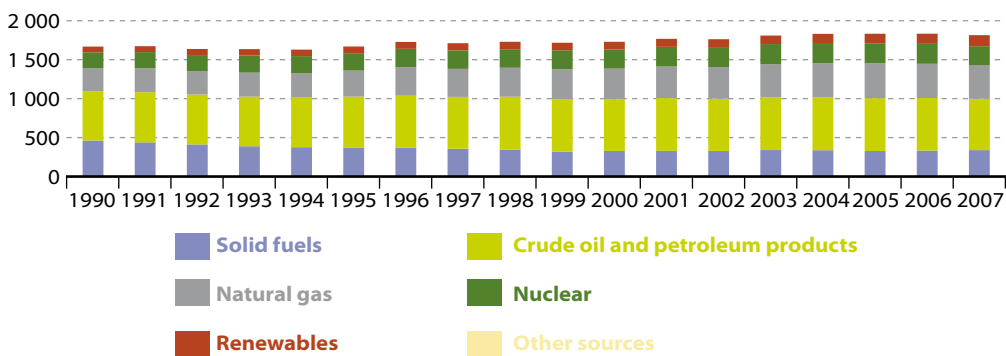
### Analysis

*Energy consumption has grown since 2000 but has shown signs of stabilising over recent years. An overall shift away from solid fuels towards natural gas and renewable energies has taken place*

Gross inland energy consumption presented an average annual growth of 0.7 % between 2000 and 2007, slightly higher than the rate of 0.4 % in the previous decade. However, since 2003 energy consumption has levelled off. Overall, there has been a shift away from solid fuels, which represented about 27 % of the total consumption in 1990 and only about 18 % in 2007. This shift has been predominantly in favour of natural gas, rising from 18 % to 24 % over the same period, and, to a lesser extent, nuclear energy (rising from 12 % to 13 %) and renewable energies (rising from 4 % to 8 %). The share of crude oil and petroleum products decreased slightly from 38 % in 1990 to 36 % in 2007.

The rise in energy demand of about 80 million tonnes of oil equivalent between 2000 and 2007 mainly involved an increase of about 40 million tonnes of oil equivalent of both natural gas and renewable energies. While solid fuels also increased by about 10 million tonnes of oil equivalent, this was compensated by a decrease in crude oil and petroleum products, and nuclear energy.

**Figure 2.13: Gross inland energy consumption, by fuel, EU-27**  
(million tonnes of oil equivalent)



Source: Eurostat (tsdcc320)

### Indicator relevance

The burning of fossil fuels (coal, lignite, oil and natural gas) is the largest source of carbon dioxide emissions, and the extraction of coal, oil and gas as well as leaks from gas pipelines are among the main sources of methane emissions. Therefore, most measures to reduce greenhouse gas emissions in some way target energy consumption and the fuel mix. One such measure is shifting from solid fuels, which are high-carbon sources of energy, to lower-carbon sources such as natural gas. This, however, has been one of the underlying causes of greater energy dependency in the EU.

### Definition

Gross inland energy consumption is the quantity of energy consumed within the borders of a country. It is calculated as total domestic energy production plus energy imports minus energy exports (including fuel supplied to international marine bunkers). The indicator is broken down into the main types of energy sources.

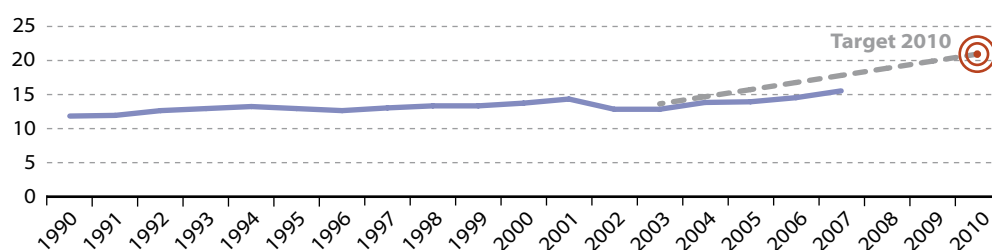
## Electricity generation from renewables

The share of renewables in electricity production increased from 13.8 % in 2000 to 15.6 % in 2007 in the EU-27, but remains below the path to the 2010 target of 21 %



Between 2000 and 2007, the contribution of electricity from biomass, hydro, wind, geothermal and solar energy increased progressively, reaching 15.6 % in 2007. After a decline during the early years of the decade, the annual growth rate is now substantially higher than during the 1990s. Between 2006 and 2007 the share of renewables grew by 1.0 percentage point. However, reaching the 21 % share by 2010 would require almost double of this rate.

Relatively long lead times for power generation investments may partially explain the previous slow progress. Prices for renewable energies, which for some technologies remain higher than conventional power generation, may also contribute to limit the speed of growth. In addition, regulatory barriers, such as difficulties in obtaining planning permission or grid access, persist in many Member States <sup>(17)</sup>.



### Analysis

*Capacity of renewable electricity generation needs to speed up to meet 2010 target*

**Figure 2.14:** Electricity generated from renewable sources, EU-27 (% of gross electricity consumption)

Source: Eurostat (tsdcc330)

Renewable energy sources produce negligible or zero greenhouse gas emissions. In 2001, the Directive on electricity production from renewable sources <sup>(18)</sup> established an indicative framework to increase the share of renewables in gross electricity consumption in the EU-15 to 22.1 % by 2010, later modified to 21 % for the EU-27. This target was reaffirmed in the Sustainable Development Strategy as well as in the Renewable Energy Directive <sup>(19)</sup>.

### Indicator relevance

The indicator is defined as the share of electricity produced from renewables in gross national electricity consumption.

### Definition



## Consumption of biofuels in transport



Biofuels are a small but rapidly growing energy source for transport. Their consumption has shown accelerated growth since 2000 and reached a share of 2.6 % in 2007 in EU-27. However, despite this growth their share remains below the target path

### Analysis

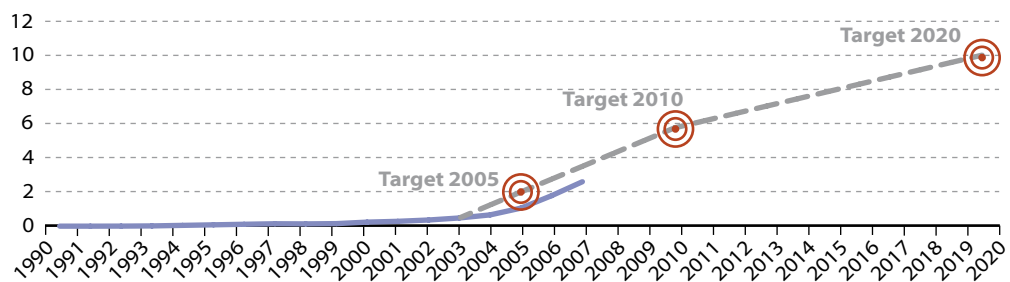
*If growth in biofuels continues, the targets will probably be met*

Between 1990 and 2000 the EU-27 share of biofuels in the petrol and diesel consumption of transport increased from zero to 0.24 %. From 2000 to 2007 the growth rate has increased leading to a share of 2.6 % in 2007.

Even though in 2007 the share of biofuels remains well below the target path, the current rate of growth would be sufficient to reach the 5.75 % target by 2010 as well as the binding 10 % target by 2020.

**Figure 2.15: Share of biofuels in total fuel consumption of transport, EU-27 (%)**

Source: Eurostat (tsdcc340)



### Indicator relevance

Biofuels are a means to curb greenhouse gas emissions from transport and simultaneously reduce the EU dependency on oil imports <sup>(20)</sup>.

A binding target was set for 2020 in the Directive on renewable energy promotion <sup>(21)</sup>: to reach a 10 % share of renewable fuels in the total fuel consumption of transport, including all renewable energy sources that can be used in transport. The Directive also reconfirms the indicative target for biofuels and other renewable fuels established in the Biofuels Directive <sup>(22)</sup> of 5.75 % for 2010. In practice, biofuels are expected to contribute all but a tiny proportion of the renewable energy used in transport up to 2010. In order to address concerns about the impact of biofuel production on the environment and in food production, only biofuels conforming to the sustainability criteria laid down in the Directive are taken into account.

### Definition

The indicator is defined as the share of biofuels, calculated on the basis of energy content, in the petrol and diesel consumption of transport.

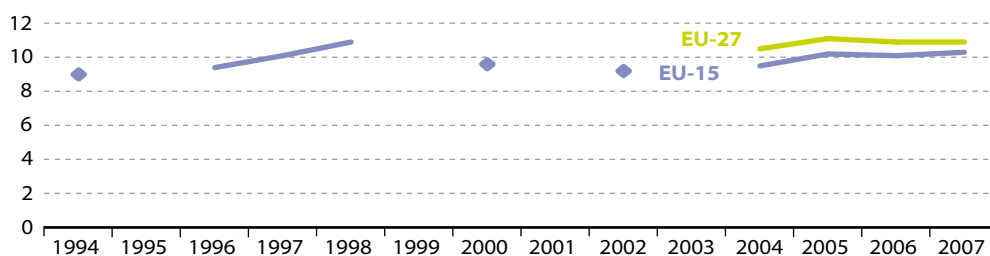
## Combined heat and power

The uptake of combined heat and power, or cogeneration, has increased between 2004 and 2007, reaching 10.9 % of gross electricity generation in the EU-27



Despite the small decrease in 2006, the share of combined heat and power (CHP) in total EU-27 electricity generation rose by 0.4 percentage points between 2004 and 2007 to 10.9 %. Although a longer time-series for EU-15 is also shown in Fig. 2.16 these data should be treated with caution due to changes in the calculation methodology over time.

According to the Energy Efficiency Action Plan <sup>(23)</sup>, several barriers prevent expansion of capacity. These include the lack of district heating networks in many areas.



### Analysis

*Combined heat and power generation has increased moderately since 2004*

**Figure 2.16:** Combined heat and power generation (% of gross electricity generation)

Source: Eurostat (tsdcc350)

Combined heat and power or cogeneration is a technology used to improve energy efficiency through the simultaneous generation of electricity and useful heat. CHP plants exist in various scales ranging from micro CHP employed in single family homes to large-scale facilities. The heat delivered may be used for process or space-heating purposes close to the CHP plant or it can be distributed through district heating networks.

The Directive on the promotion of cogeneration <sup>(24)</sup> encourages Member States to identify and exploit their potential for 'high-efficiency cogeneration' which is defined as cogeneration providing at least 10 % energy savings compared to separate production. More recently, both the Sustainable Development Strategy and the Action Plan on Energy Efficiency <sup>(25)</sup> have called for increased promotion of CHP.

This indicator is defined as the share of electricity from combined heat and power (CHP) generation in gross electricity generation.

### Indicator relevance

### Definition

## Implicit tax rate on energy



The implicit tax rate on energy fell by about 4 % between 2000 and 2007. Although this decrease in the effective tax burden on energy is inconsistent with the EU objective to shift taxation from labour onto resource and energy use, there are also indications that taxation may have stimulated energy saving

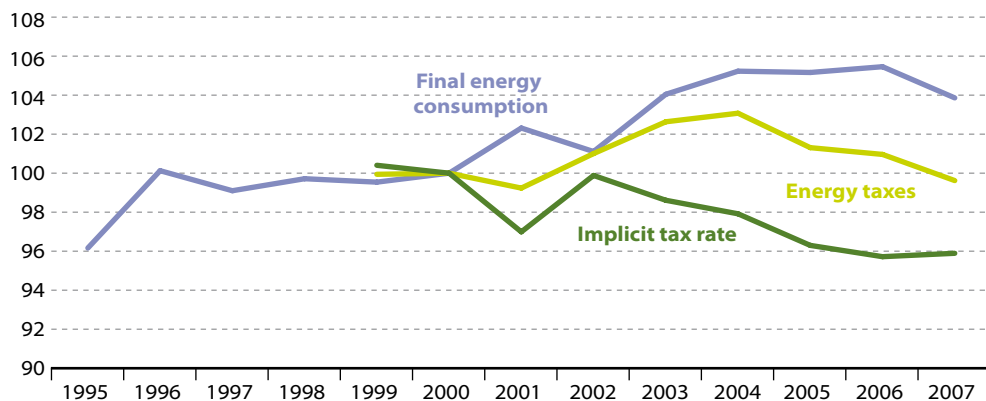
### Analysis

*The implicit tax rate on energy has fallen since 2000*

The ratio of energy tax revenues to final energy consumption represents the effective tax burden on energy. The decreases in the implicit tax rate show a decline in the effective tax burden on energy relative to the potentially taxable base. This is not consistent with the Sustainable Development Strategy's principle of shifting taxation from labour onto resource and energy consumption. Nevertheless, there is some evidence that the previously high energy taxation has stimulated improvements in energy efficiency and has therefore helped to conserve energy. There has also been a greater reliance on policy instruments other than taxes, such as emissions trading. It is also true that energy taxes were reduced to compensate for the substantial rise in the oil price over recent years <sup>(26)</sup>.

**Figure 2.17:**  
Implicit tax rate on energy; energy tax revenues; final energy consumption, EU-27  
(index 2000=100)

Source: Eurostat (tsdcc360)



### Indicator relevance

Many countries use energy taxes as an economic instrument to implement the polluter-pays-principle as well as to support the Kyoto Protocol objectives. The Sustainable Development Strategy recommends that Member States 'consider further steps to shift taxation from labour to resource and energy consumption and/or pollution, to contribute to the EU goals of increasing employment and reducing negative environmental impacts in a cost-effective way'. Furthermore, the Energy Taxation Directive <sup>(27)</sup> sets minimum tax rates on energy products and electricity. These levels of taxation do not directly reflect the carbon content of the fuels, but rather the competitive position of the different energy products and electricity.

### Definition

The indicator is defined as the ratio between the revenue from energy taxes and final energy consumption, expressed as an index. Prices have been deflated. Implicit tax rates measure the average effective tax burden related to the potentially taxable base.

## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Greenhouse gas emissions

The methodologies for estimating and reporting greenhouse gas emissions under UNFCCC is described in United Nations Document FCCC/CP/2002/8: *Review of the implementation of commitments and of other provisions of the Convention. National communications: Greenhouse gas inventories from Parties included in Annex I to the Convention. UNFCCC guidelines on reporting and review*

Note that definitions do not coincide with the NACE nomenclature.

### Greenhouse gas emissions by sector

The source categories under UNFCCC are:

1. Energy
  - 1A Fuel combustion activities
    - 1A1 Energy industries
    - 1A2 Manufacturing industries and construction
    - 1A3 Transport
    - 1A4 Other sectors
    - 1A5 Other
  - 1B Fugitive emissions from fuels
2. Industrial processes
3. Solvent and other product use
4. Agriculture
5. Land use, land-use change and forestry
6. Waste
7. Other

Emissions from international aviation and maritime transport (bunkers) are not covered by the Kyoto Protocol and are reported as memo items.

### Greenhouse gas intensity of energy consumption

The greenhouse gas emissions included in the calculation are those of source category 1 (Energy), as described above. Emissions due to international aviation and maritime transport are not included

Gross inland energy consumption is described separately below.

### Global surface average temperature

The time-series used in this publication is based on the HadCRUT3 dataset, compiled by the Climatic Research Unit, School of Environmental Sciences, University of East Anglia and Hadley Centre for Climate Prediction and Research, UK Meteorological.

Temperature deviations are expressed in terms of the average temperature over the 30-year period from 1961 to 1990. This base period has been chosen because it has the best coverage of measuring stations and can therefore be considered as relatively unbiased.

Annual values are approximately accurate to  $\pm 0.05$  °C (two standard errors) for the period since 1951. They are about four times as uncertain during the 1850s, with the accuracy improving gradually between 1860 and 1950 except for temporary deteriorations during data-sparse, wartime intervals.

### Consumption of renewables

The sources of renewable energy are:

- Hydro: potential and kinetic energy of water converted into electricity in hydroelectric plants;
- Geothermal: energy available as heat emitted from within the Earth's crust, usually in the form of hot water or steam;
- Wind: kinetic energy of wind exploited for electricity generation in wind turbines;
- Biomass and waste: covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation. It comprises: charcoal, wood, wood wastes, other solid wastes;
- Solar: solar radiation exploited for hot water production and electricity generation. Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included.

### Energy dependency

Net imports are calculated as total imports minus total exports. Energy dependency may be negative in the case of net exporter countries while positive values over 100 % indicate the accumulation of stocks during the reference year.

### Gross inland energy consumption

Gross inland energy consumption represents the quantity of energy necessary to satisfy the inland consumption of the geographical entity under consideration. It is the sum of gross inland consumption of solid fuels, liquid fuels, gas, nuclear energy, renewable energies, and other fuels. The gross inland consumption of an individual energy carrier is calculated by adding primary production and recovered products of energy together with total imports and withdrawals from stocks minus total exports and bunkers. It corresponds to the addition of consumption, distribution losses, transformation losses and statistical differences.

### Electricity generation from renewables

Renewable energy includes hydroelectricity, biomass, wind, solar, tidal and geothermal energies. Directive 2001/77/EC defines renewable electricity as the share of electricity produced from renewable energy sources in total electricity consumption. The electricity generated from pumping in

hydropower plants is included in total electricity consumption but it is not included as a renewable source of energy.

### Combined heat and power (CHP)

Note that because the methodology has evolved over time there was no consistent time-series before 2004. CHP statistics depend strongly on the methodology used, since it is technically complicated to separate CHP electricity from the total electricity generated in CHP plants. The methodology, which has a large impact on the statistics has evolved in the course of pilot projects for collecting CHP statistics starting from the early 1990s.

According to Directive 2004/8/EC the overall efficiency of a CHP unit is used to determine whether the electricity generation is fully CHP or not. If the overall efficiency is above the efficiency thresholds at levels defined by the Member States, set by the Directive to at least 75 % (80 % for steam condensing extraction turbines and combined cycle units) , all the electricity generated is considered as CHP electricity. On the other hand, if the overall efficiency is below the threshold, the amount of CHP electricity, ECHP is calculated as:

$$ECHP = C \cdot H$$

where  $C$  is power-to-heat ratio characteristic to the plant and  $H$  is CHP heat generation of the plant.

Data for the year 2004 and onwards are collected through the joint Eurostat/IEA/UNECE annual questionnaire for electricity.

### Consumption of biofuels in transport

'Biofuels' means liquid or gaseous fuel for transport produced from biomass; 'biomass' means the biodegradable fraction of products, wastes and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal solid waste <sup>(28)</sup>.

The most important liquid biofuels are bio-ethanol (ethanol produced from biomass and/or biodegradable fraction of waste), bio-diesel (a diesel quality liquid fuel produced from vegetable or animal oil), bio-methanol (methanol produced from biomass), bio-dimethylether (a diesel quality fuel produced from biomass).

### Implicit tax rate on energy

Energy taxes include taxes on energy products used for both transport (excluding aviation and maritime transport) and stationary purposes. The most important energy products for transport purposes are petrol and diesel. Energy products for stationary use include fuel oils, natural gas, coal, biomass and electricity. CO<sub>2</sub> taxes are included under energy taxes rather than under pollution taxes.

The data include some provisional values for energy taxes in 2004 and final energy consumption in 1998 and 2000-2004. There is a break in the series in 1995.

## Chapter notes

- (1) Countries with commitments under the Kyoto Protocol to limit or reduce greenhouse gas emissions must meet their targets primarily through national measures. As an additional means of meeting these targets, the Kyoto Protocol introduced three market-based mechanisms: emissions trading, the clean development mechanism, and joint implementation.
- (2) Pachauri, R.K. and Reisinger, A. (eds), *Climate change 2007: Synthesis report*, IPCC, Geneva, 2007, pp. 48-54.
- (3) Metz, B., Davidson, O.R., Bosch, P.R., Dave, R. and Meyer, L.A. (eds), *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, 2007, pp. 227-9.
- (4) Decision 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.
- (5) Regulation (EC) No 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles.
- (6) Directive 2009/30/EC amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.
- (7) European Commission, *White paper - Adapting to climate change: towards a European framework for action*, COM(2009) 147.
- (8) European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2008: Tracking progress towards Kyoto targets*, Report No 5/2008, Publications Office of the European Union, Luxembourg, 2008.
- (9) Commission communication, *Energy for the future: renewable sources of energy - White Paper for a Community strategy and action plan*, COM(97) 599.
- (10) Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.
- (11) Eurostat, *Energy, transport and environment indicators*, 2009 edition, Publications Office of the European Union, Luxembourg, 2009.
- (12) World Meteorological Organization, *WMO statement on the status of the global climate in 2008*, Geneva, WMO-No 1039, 2009.
- (13) Knight, J., Kennedy, J.J., Folland, C., Harris, G., Jones, G.S., Palmer, M., Parker, D., Scaife, A., and Stott, P., 'Do global temperature trends over the last decade falsify climate predictions?' [in *State of the climate in 2008*], *Special Supplement to the Bulletin of the American Meteorological Society*, 90(8), August 2009, pp. 24-5.
- (14) Pachauri, R.K and Reisinger, A. (eds.), *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, IPCC, Geneva, 2007, pp.44-5.
- (15) Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. and Miller, H.L. (eds), *Climate Change 2007: The physical science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, 2007, p.5.
- (16) Commission communication, *Second strategic energy review: an EU energy security and solidarity action plan*, COM(2008) 781.
- (17) Commission communication, *Renewable energy road map. Renewable energies in the 21st century: Building a more sustainable future*, COM(2006) 848.
- (18) Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market.
- (19) Directive 2009/28/EC, op. cit.
- (20) Commission communication, *An EU strategy for biofuels*, COM(2006) 34.
- (21) Directive 2009/28/EC, op. cit.
- (22) Directive 2003/30/EC, *on renewable energy in transport*.
- (23) Commission communication, *Action plan for energy efficiency: Realising the potential*, COM(2006) 545.
- (24) Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market.
- (25) Commission communication, *Action plan for energy efficiency: Realising the potential*, op.cit.
- (26) European Commission, *Taxation trends in the European Union: Data for the EU Member States and Norway*, 2009 edition, Publications Office of the European Union, Luxembourg, 2009, pp. 123-4.
- (27) Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity, replacing, with effect from 1 January 2004, Council Directive 92/81/EEC on the harmonization of the structures of excise duties on mineral oils, and Council Directive 92/82/EEC on the approximation of the rates of excise duties on mineral oils
- (28) Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport.





28 QUINCUNCES

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## Sustainable transport












*'To ensure that our transport systems meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment'*

### Overview of main changes

Changes since 2000 concerning sustainable transport show a rather mixed picture. There is only minor progress in decoupling transport volumes and transport energy consumption from economic development. Changes in the modal split and transport volumes seem, in general, to be more favourable for passenger transport than for freight transport. Despite a short-lived increase in the share of investments in infrastructure for environmental friendly modes, such as rail and ports, during the early years of the decade, the pattern of expenditure has returned to favouring road. Even if road accident fatalities have been much reduced, faster progress will be needed to achieve the objective of halving road fatalities between 2001 and 2010. Although greenhouse gas emissions from transport have continued to increase at an unfavourable rate and CO<sub>2</sub> emissions from new passenger cars remain far from their target, emissions of ozone precursors and particulate matter decreased favourably.

*Overall, changes since 2000 concerning sustainable transport show a rather mixed picture*


**Table 3.1: Evaluation of changes in the sustainable transport theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Energy consumption of transport relative to GDP	<b>Transport and mobility</b>	
	 Modal split of freight transport	 Volume of freight transport relative to GDP
		 Volume of passenger transport relative to GDP
	 Modal split of passenger transport	 Investment in transport infrastructure
		: Passenger transport prices
	<b>Transport impacts</b>	
	 Greenhouse gas emissions from transport	 Average CO <sub>2</sub> emissions per km from new passenger cars*
		 Emissions of ozone precursors from transport
	 People killed in road accidents**	 Emissions of particulate matter from transport


\* EU-25, from 2004


\*\* From 2001

**LEGEND:**

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data

### Headline indicator

*Energy demand of transport is growing slightly slower than GDP*

Although economic growth has exceeded the growth of energy consumption by transport since 2000, the ratio of energy consumption per unit GDP showed only moderate decreases between 2000 and 2007. There are therefore only modest signs of decoupling economic development from the energy consumption of transport.

### Transport and mobility

*Road continues to dominate freight transport and freight transport is still growing faster than GDP*

Between 2000 and 2007, the share of road in inland freight transport in the EU-27 increased to more than 75 %, and as a consequence the shares of rail and inland waterway transport decreased slightly over the same period. The growth in freight transport, as measured in tonne-km, exceeded GDP growth in the EU-27 between 2004 and 2007. Freight transport therefore remains strongly coupled to economic development.

*Passenger transport is growing at a lower rate than GDP*

Modal shares in inland passenger transport remained rather stable over the period 2000 to 2007, although a slight increase in the share of car transport (accounting for 83.4 % in 2007) was apparent. Rail transport remained constant at 7.1 %. As a consequence there were slight decreases in the share of bus and coach transport. Passenger transport volumes in the EU-27 are still growing, although below the rate of GDP, indicating that decoupling of transport volumes and GDP development for passenger transport is taking place.

*Energy consumption of aviation and road transport is still growing*

The total energy consumption of transport grew significantly between 2000 and 2007. Aviation showed the highest increase of all transport modes, followed by road transport. In contrast, rail reduced its energy consumption, even though it increased its transport performance in passenger and freight transport.

*Higher investments in transport infrastructure of modes other than road*

Total investment in transport infrastructure expressed in current prices grew considerably between 2000 and 2006. The share of road infrastructure investments fell from 60 % in 2000 to 53 % in 2003, but has since returned to its former level of about 60 % over the period 2005-6. Mirroring these developments, there was a short-lived but significant trend towards investments in modes such as rail and ports, which are apt to be more environmentally friendly than road. However, this favourable trend peaked in 2003, and the trend since then has been unfavourable.

*Road and rail are getting more expensive compared to air transport*

Between 2000 and 2008, prices for passenger transport by road, rail and air increased significantly, although at different rates. Overall, prices for road and rail transport have increased faster than those for air transport, the transport mode with the fastest growing energy consumption as well as comparatively high emissions of greenhouse gases.

### Transport impacts

*EU-27 greenhouse gas emissions of transport are still growing but have fallen behind the growth rate of transport energy consumption*

EU-27 total greenhouse gas emissions from transport (excluding international aviation and maritime transport) increased by 26 % between 1990 and 2007. Between 2000 and 2007 growth rates of transport greenhouse gas emissions in the EU-27 slowed down compared to the period 1990-2000. Road dominates with 94 % of total transport greenhouse gas emissions in 2007.

Although new passenger cars have become more fuel efficient their average CO<sub>2</sub> emissions per km remain significantly above the necessary path to reach EU targets.

*New passenger cars still emit too much CO<sub>2</sub>*

In contrast to the continuously growing emissions of greenhouse gases, emissions of air pollutants, such as ozone precursors and particulate matter have been steadily declining since



1990 due to the progressive tightening of emission standards. In the case of ozone precursors the current level of emissions is less than half of those observed in 1990.

There has been progress in reducing road accident fatalities within the EU-27, and they have fallen by 43 % between 1991 and 2007. Between 2000 and 2007 the decrease has accelerated even more. However, the number of fatalities in the EU-27 is lagging roughly 2 years behind the linear path to the EU road safety target of halving road fatalities between 2001 and 2010.

*Considerable reductions achieved in air pollutant emissions*

*Roads are becoming safer*

## Background

Transport fulfils fundamental needs of human society, providing mobility and facilitating industry and trade. About 4 % of the EU workforce are employed directly in the transport sector and another 1.4 % work in the manufacture of transport equipment. Further jobs are provided by infrastructure maintenance and construction and sales and repair of vehicles. The value added by the transport sector amounts to about 4.0 % of GDP. Vehicle manufacturing contributes another 1.7 % and sales, maintenance and repairs of vehicles a further 1.6 %. 13.6 % of household spending is on transport <sup>(1)</sup>. The sector is therefore of considerable economic importance.

*Transport contributes to the economy and to people's lives*

However, transport is also associated with environmental and social costs. It contributes significantly to rising emissions of greenhouse gases, noise annoyance, air pollution, the fragmentation of habitats and other impacts on wildlife and ecosystems. In 2007, more than 42 000 people died in road accidents in the EU-27, along with lower numbers of casualties in rail, air and water transport. There are also inequities. Not all households and regions have equal access to the benefits of transport and the regulatory framework for different transport modes with respect to safety, taxation and interoperability, etc. differs between countries.

*But it also has costs and inequities*

Transport is also – especially over recent years – subject to profound changes in its major framework conditions. The unpredictability of fuel prices, together with the financial crisis, has brought car manufacturers, airlines and related industries into substantial economic difficulties. To supply the increasing demand for transport fuels, biofuels have been promoted, but there are serious concerns about the sustainability of biofuel production and the possible conflicts with food production for a rising world population. In a number of cities across the EU road pricing schemes have been introduced to fight urban congestion and pollution and to promote public transit. Although a substantial part of peoples' daily trips are made on foot, human powered mobility is often in conflict with motorised transport and struggles for space and safety especially in urban areas.

These are some, but not all, of the reasons why transport is one of the key challenges of the EU Sustainable Development Strategy (EU SDS). It is the purpose of the EU SDS and the Common Transport Policy to attempt to reconcile the conflicting aims of providing essential economic and social benefits whilst avoiding high social and environmental costs. Since many of these costs are not confined to those who are responsible for them, but paid by society as a whole, the Common Transport Policy was concerned from the very beginning with how to introduce more equity into transport markets. The 2001 White Paper <sup>(2)</sup> proposed that the imbalances and inefficiencies of European transport systems should be corrected through appropriate pricing structures and set out a comprehensive strategy for the decade to 2010, to break the link between transport growth and economic growth and to restore the balance between the modes. This approach was updated and adjusted in a mid-term review in 2006 <sup>(3)</sup>.

*Transport policy must find a balance between conflicting demands*

The 'Greening Transport' package was launched in 2008 <sup>(4)</sup>. It is accompanied by a strategy for the internalisation of external costs of transport <sup>(5)(6)</sup>, and a proposal on the charging of heavy goods vehicle for infrastructure use which will lead to more efficient and greener road tolls for

lorries, using the revenue to reduce environmental impacts from transport. Electricity used in rail transport has been included in the EU Emission Trading Scheme (EU ETS) since 2005. Regarding aviation, emissions from flights with origin or destination within the EU will be covered by the EU ETS from 2012. Moreover, measures to improve fuel quality and a binding target of 10 % share of renewable energy sources in transport by 2020 are part of the Climate and Energy package. The Fuel Quality Directive was amended to introduce a mandatory target for reducing greenhouse gas intensity of fuel used in road transport. In addition, a Directive has also been adopted to reduce energy consumption, CO<sub>2</sub> and pollutant emissions from public service road vehicles<sup>(7)</sup>.

As part of the integrated approach to reducing CO<sub>2</sub> emissions from light-duty vehicles, the average CO<sub>2</sub> emissions from new passenger cars has been set at 130 g CO<sub>2</sub>/km by 2012-2015 and 95 g CO<sub>2</sub>/km by 2020.

The Commission intends to publish a further White Paper in 2010 and in preparation has recently launched a consultation outlining the main challenges for the next decade<sup>(8)</sup>.

### Box 3.1: Objectives related to 'Sustainable transport' in the Sustainable Development Strategy

The overall strategy objective is concretised into the following operational targets and objectives:

- Decoupling economic growth and the demand for transport with the aim of reducing environmental impacts.
- Achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions.
- Reducing pollutant emissions from transport to levels that minimise effects on human health and/or the environment.
- Achieving a balanced shift towards environment friendly transport modes to bring about a sustainable transport and mobility system.
- Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health.
- Modernising the EU framework for public passenger transport services to encourage better efficiency and performance by 2010.
- In line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140g/km (2008/09) and 120g/km (2012).
- Halving road transport deaths by 2010 compared to 2000.

## Potential linkages

### Linkages within sustainable transport

There are important linkages between the different issues of this chapter. Transport growth in different transport modes has direct impacts on energy consumption for transport and, therefore, determines some of its impacts such as emissions of greenhouse gas emissions or air pollutants. Transport prices influence transport demand for different modes and is thus related to the impacts of the modes demanded.

### Linkages with the economic dimension

Transport demand is closely connected to economic development. Increasing GDP leads in general to increasing freight transport volumes, both in tonnes and tonne-km. Ongoing globalisation is another trigger for increasing transport distances which lead again to higher transport volumes expressed in tonne-km. An expanding economy depends on increasing manpower which again increases the demand for passenger transport. In addition, increasing welfare contributes to increasing motorisation and growth of leisure transport, which is the most frequent purpose of journeys in many countries.

### Linkages with the social dimension

Transport has important social functions in providing access to basic services, such as health, education, shopping, leisure and recreation. It also provides the means to commute to work. However, not all social groups have equal accessibility to transport nor have the financial possibility to use the transport means they need. This is likely to hamper a person's chances and

possibilities in life. Income, age, gender, disability and where people live are factors which may affect the need for or access to transport. Transport is therefore linked to the issues of social inclusion, access to labour markets, education, etc.

Transport also has major negative impacts on the environment. Biodiversity is affected by the construction of transport infrastructure, and air pollution affects plants and animals as well as human beings. Airport traffic affects the nesting behaviour of birds.

Traffic accidents, air pollution and transport noise are also linked to human health. Although the emissions of transport-related air pollutants have been steadily decreasing, ambient concentration of air pollutants have not reduced. In addition, urbanisation leads to higher number of exposed persons in areas with high traffic volumes and thus high concentrations of air pollutants. Traffic noise is also a major source of annoyance, especially in urban areas.

The ever-growing consumption of energy by transport is strongly linked to issues such as the security of supply, production of renewables, and, to an increasing extent, climate change. While some biofuels might contribute to energy independence and the reduction of greenhouse gas emissions to the atmosphere, their production may also have negative impacts on biodiversity, soil erosion, water use, water quality and security of food supply when plants cultivated for energy compete with food plants, especially in developing countries.

*Linkages with the environment dimension and health*

*Linkages with climate change and energy*

#### Further reading

*Commission communication, A sustainable future for transport: Towards an integrated, technology-led and user friendly system, COM(2009) 279*

*Commission communication, Greening Transport, COM(2008) 433*

*European Commission, White Paper - European transport policy for 2010: time to decide, COM(2001) 370*

*European Commission, Keep Europe moving – Sustainable mobility for our continent – Mid-term review of the European Commission's 2001 transport White Paper, COM(2006) 314, Publications Office of the European Union, Luxembourg, 2006*

*European Commission, EU energy and transport in figures, Statistical pocketbook 2009, Publications Office of the European Union, Luxembourg, 2009*

*European Environment Agency, Transport at a crossroads - TERM 2008: indicators tracking transport and environment in the European Union, Publications Office of the European Union, Luxembourg, 2009*

*Eurostat, Panorama of transport, 2009 edition, Publications Office of the European Union, Luxembourg, 2009*

## Energy consumption of transport relative to GDP



The energy consumption of transport has grown only slightly slower than GDP, indicating a continuing interdependence between the two. While rail transport has reduced its energy consumption, air and road transport have both shown significant increases

### Analysis

*Economic growth has exceeded the growth in the energy consumption of transport since 2000, but there is only very minor decoupling*

Between 2000 and 2007, the energy consumption of transport in the EU-27 increased by 11 %, whereas GDP grew somewhat faster 2.1 % per year on average over the same period, and as a result the consumption of energy per unit of GDP decreased by 0.6 % per year on average, indicating only minor decoupling.

In 2007, road transport accounted for about 82 % of transport energy consumption. Between 2000 and 2007, its energy consumption increased by 1.4 % per year on average, which represent a slight slowing down compared to the annual growth rate of 1.7 % between 1990 and 2000. However, due to even higher growth rates of air transport energy consumption (2.3 % per year), the share of road transport in total transport energy consumption slightly decreased by 0.2 % per year between 2000 and 2007.

Air transport reached a share of 14.2 % in total transport energy consumption in 2007, compared to 13.4 % in 2000. Over the previous decade, annual growth rates had been even higher (4.6 % per year), but following the terror attacks in New York in September 2001, civil aviation significantly slowed down, only picking up again between 2004 and 2007, reaching similar levels to the previous decade.

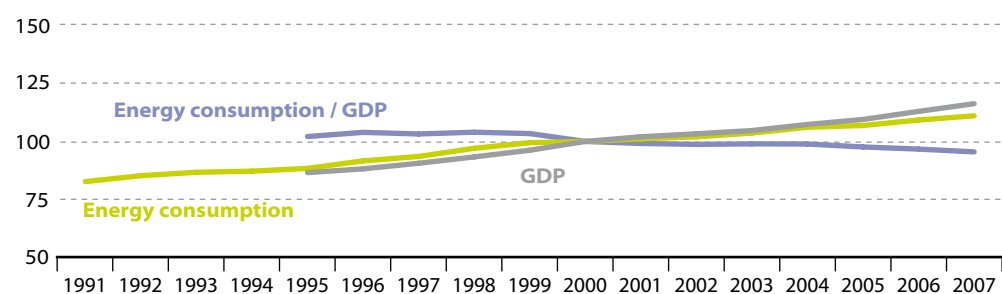
In 2007 rail transport and inland navigation had shares in total transport energy consumption of 2.5 % and 1.4 %, respectively. Despite an increase in volumes of both passenger and freight transport, the energy consumption of rail transport decreased by 0.4 % per year between 2000 and 2007, as did inland navigation.

Although the growth of energy consumption by transport has slowed down since 2000 compared to the previous decade, the growth in energy consumption of aviation and road transport, which are still high, and almost entirely based on fossil fuels, resulted in growing CO<sub>2</sub> emissions.

Some Member States showed a GDP development well above the growth in the energy consumption of transport, and thus show decoupling. In Belgium, Germany, Estonia, Cyprus, France, Sweden and the UK, for instance, the ratio of growth in transport energy consumption to that of GDP between 2000 and 2007 was significantly below 1 and these countries therefore exhibit decoupling. At the other end of the scale, in Poland, the Czech Republic, Austria, Hungary, Denmark and Luxembourg the growth in energy consumption of transport significantly exceeded GDP development. These latter countries are transit countries and have lower fuel prices than their neighbours, particularly for diesel.

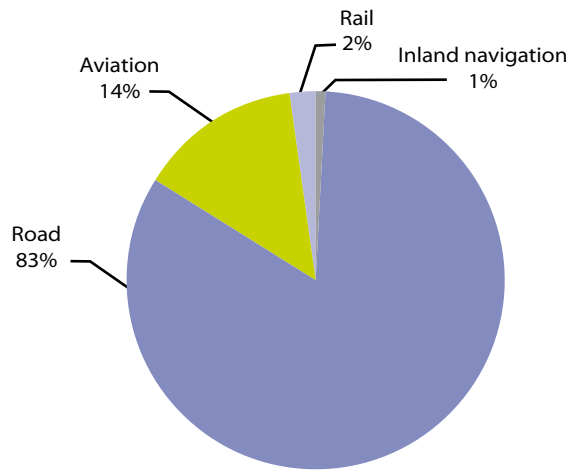
**Figure 3.1:**  
Ratio of energy consumption of transport to GDP, EU-27 (index 2000=100)

Source: Eurostat (tsdtr100)



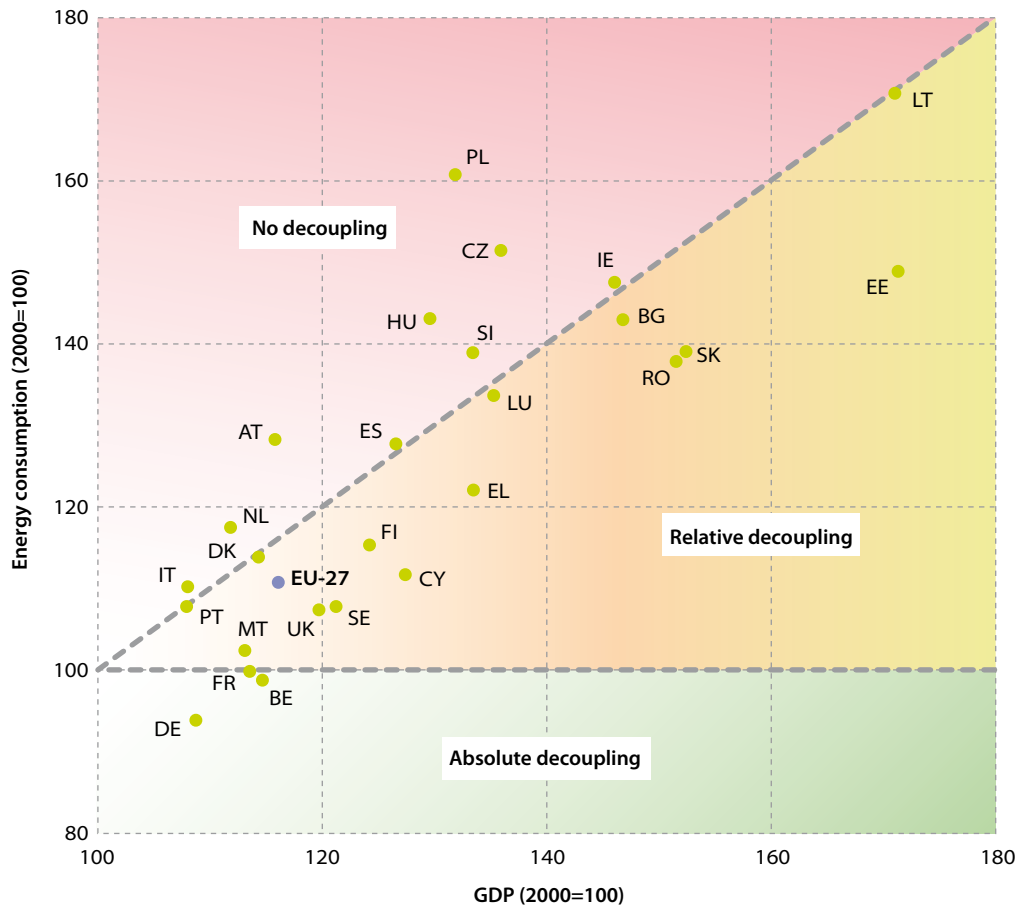
NB: Energy consumption of transport includes all modes of transport, with the exception of maritime and pipelines.





**Figure 3.2:**  
Energy consumption of transport, by mode, EU-27, 2007 (%)

Source: Eurostat (tsdtr100)



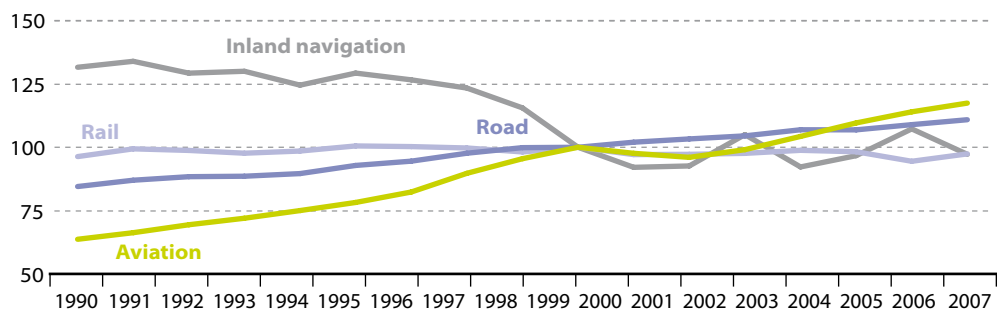
**Figure 3.3:**  
Growth in energy consumption of transport relative to GDP, by country, 2007 (index 2000=100)

Source: Eurostat (tsdtr100)



**Figure 3.4: Energy consumption of transport, by mode, EU-27, 2007**  
(index 2000=100)

Source: Eurostat (tsdtr100)



### Indicator relevance

Energy use for transport leads to air pollution, climate change and the depletion of fossil fuel reserves. The Sustainable Development Strategy has the objectives of ‘achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions’ as well as ‘decoupling economic growth and the demand for transport with the aim of reducing environmental impacts’. The mid-term review of the 2001 transport White Paper also stresses that ‘Transport policy must contribute to achieving the objectives of European energy policy as laid down in the conclusions of the European Council of March 2006, in particular as regards security of supply and sustainability’<sup>(9)</sup>. In 2007 the European Council agreed to a target of increasing energy efficiency by 20 % by 2020 compared to the business-as-usual growth. According to the Energy Efficiency Action Plan the transport sector consumes the bulk of oil products and has the fastest growing greenhouse gas emission profile and therefore improving its energy efficiency is especially important<sup>(10)</sup>.

### Definition

This indicator is defined as the ratio between the energy consumption of transport and GDP (deflated). The energy consumed by all types of transport (road, rail, inland navigation and aviation) is covered, including commercial, individual and public transport, with the exception of maritime and pipeline transport.

**Decoupling:** Decoupling can be either absolute or relative. Absolute decoupling occurs when the relevant environmental pressure is stable or decreasing while the economic driving force is growing. Decoupling is relative when the growth rate of the environmentally relevant variable is positive, but less than the growth rate of the economic variable.

## Modal split of freight transport

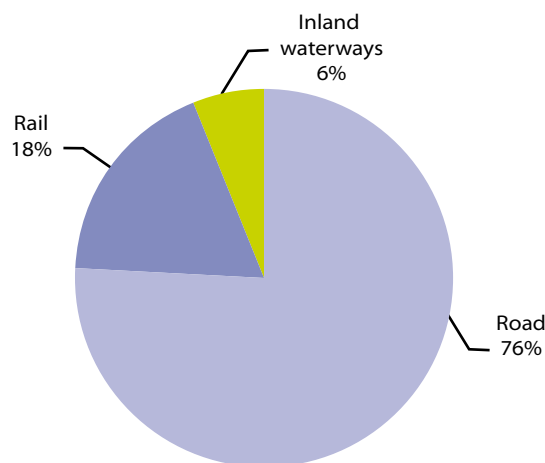
Road is still gaining market shares in inland freight transport (measured in tonne-km) in the EU-27. Although the rise in the modal share of road transport has slowed down over the period 2000-2007, no modal shift towards more environmentally friendly transport modes can be said to be occurring



Between 2000 and 2007 the modal share of road inland freight transport in the EU-27 increased by 0.4 percentage points per year and stood at 76.5 % in 2007. In contrast the modal shares of rail and inland waterways transport decreased by 0.3 percentage points per year to 17.9 % in 2007 and by 0.1 percentage points per year to 5.6 % in 2007, respectively. There is a clear sign of road gain, particularly in the countries of the 2004 and 2007 EU enlargements. Compared to the rather dynamic development towards road in the EU-27, the road share in the EU-15 grew at the more moderate rate of 0.1 percentage points per year.

### Analysis

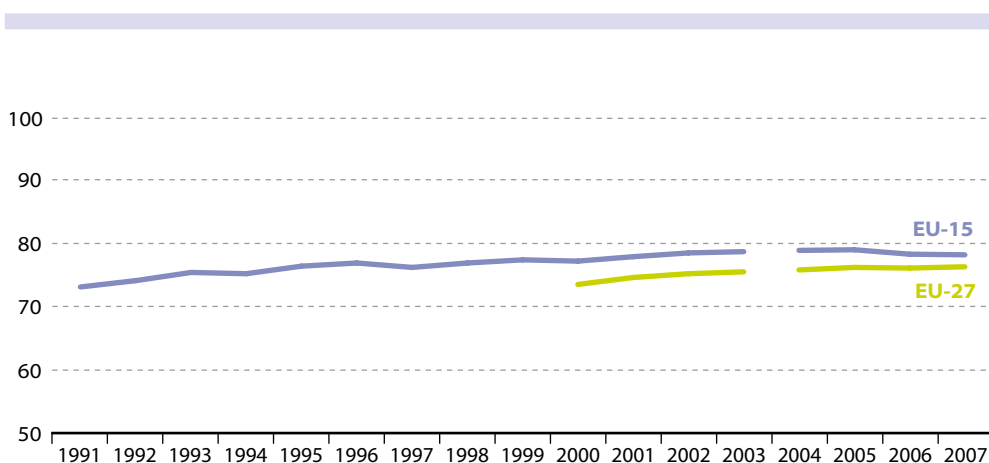
*In the EU-27 road is still gaining market share at the expense of rail and inland waterways*



**Figure 3.5: Modal split of freight transport, EU-27, 2007** (% in total inland tonne-km)

Source: Eurostat (tsdtr220)

NB: Eurostat estimates.



**Figure 3.6: Road share of freight transport (% of tonne-km)**

Source: Eurostat (tsdtr220)

NB: Eurostat estimates. Break in series in 2004.



**Indicator relevance** This indicator monitors the objective of the Sustainable Development Strategy of ‘achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system’. In its 2001 communication to the Gothenburg Council, the Commission had proposed to ‘bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998’.

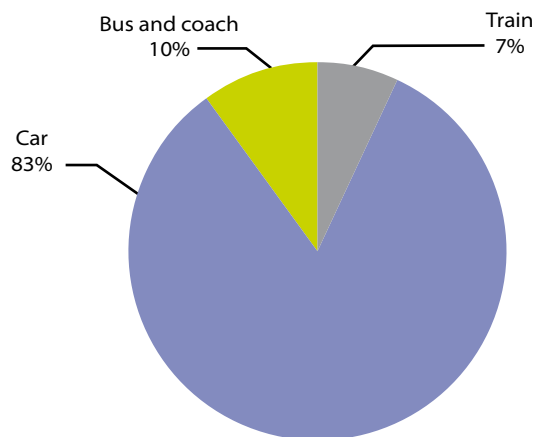
**Definition** This indicator is defined as the percentage share of each mode of transport in total inland transport expressed in tonne-kilometres. It includes transport by road, rail and inland waterways. Road transport is based on all movements of vehicles registered in the reporting country. Rail and inland waterways transport is generally based on movements on national territory, regardless of the nationality of the vehicle or vessel, but there are some variations in definitions from country to country.

## Modal split of passenger transport

The share of passenger cars, which is by far the most important means of inland passenger transport, has stabilised between 2000 and 2007 and there has been no shift towards more environmentally friendly transport modes such as rail



Passenger car modal share in the EU-27 stood at 83.4 % in 2007. Between 2000 and 2007 passenger car transport in the EU-27 gained less than 0.1 percentage points per year, whereas rail transport remained constant and bus and coach transport lost around 0.1 percentage points. Despite uncertainties regarding the data quality on passenger transport volumes, a stabilisation of car modal share can be observed and there is no indication of a significant shift towards more environmentally friendly modes. Note that domestic air transport and human powered mobility (walking, cycling) is not included due to the lack of data.



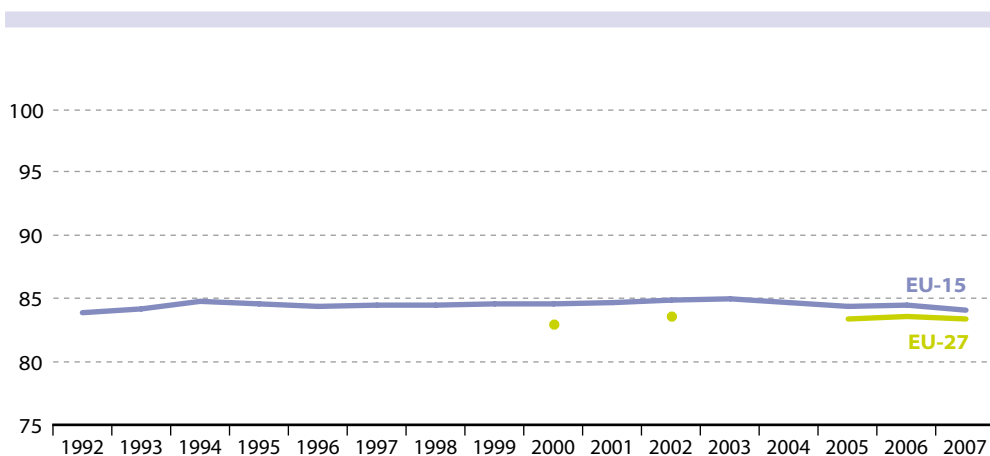
### Analysis

*Road transport dominates passenger transport in EU-27*

**Figure 3.7:** Modal split of passenger transport, EU-27, 2007 (in % in total inland passenger-km)

Source: Eurostat (tsdtr210)

NB: Eurostat estimates.



**Figure 3.8:** Car shares of passenger transport (% of passenger km)

Source: Eurostat (tsdtr210)

NB: Eurostat estimates.



**Indicator relevance** This indicator monitors the objective of the Sustainable Development Strategy of ‘achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system’. In its 2001 communication to the Gothenburg Council, the Commission had proposed to ‘bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998’.

**Definition** This indicator is defined as the percentage share of each mode of transport in total inland transport, expressed in passenger-kilometres. It is based on transport by passenger cars, buses and coaches, and trains. All data should be based on movements on national territory, regardless of the nationality of the vehicle. However, the data collection methodology is not harmonised at the EU level. Note that domestic air transport is not included due to the lack of comparable data.

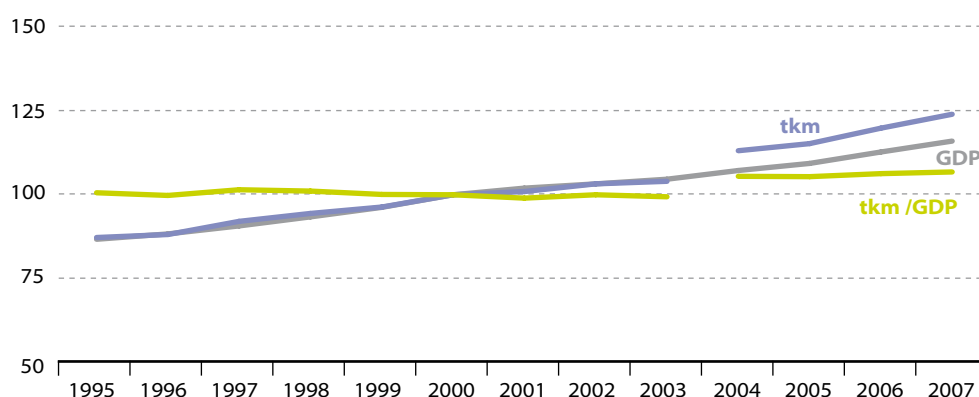
## Volume of freight transport relative to GDP

Transport volumes are still growing at higher rates than GDP. Between 2004 and 2007 there has been no visible decoupling of freight transport demand from economic growth as measured by the ratio of freight transport volumes in tonne-km to GDP



The decoupling of the demand for transport from economic growth is part of EU transport policies. However, owing to a break in the time-series between 2003 and 2004 it is difficult to draw any conclusive interpretation of the developments since 2000. Developments over the last three years (2004 to 2007) have therefore been compared with the developments between 1995 and 2000.

Between 2004 and 2007 volumes of freight transport expressed in tonne-km grew at an annual rate of 3.2 % whilst GDP grew by 2.7 % per year. The ratio tkm/GDP – as a measure of freight transport volume per unit GDP – grew over this period by 1 % per year. This is in contrast to the period 1995-2000 when freight transport grew at a slightly lower annual rate compared to GDP (2.8 % and 2.9 % respectively). Thus, the ratio tkm/GDP decreased by around 0.1 % per year over this 5-year period.



### Analysis

*Freight transport volumes are growing at higher rates than GDP*

**Figure 3.9:**  
Volume of freight transport relative to GDP, EU-27  
(index 2000=100)

Source: Eurostat  
(tsdtr230)

NB: Eurostat estimates. Break in series in 2004. Excludes aviation and maritime transport. A falling tkm/GDP curve means decoupling of transport volumes and economic growth, a rising tkm/GDP curve shows the opposite.

An operational objective of the Sustainable Development Strategy is ‘decoupling economic growth and the demand for transport with the aim of reducing environmental impacts.’

### Indicator relevance

This indicator is defined as the ratio between the volume of inland freight transport measured in tonne-kilometres and GDP (deflated). It includes transport by the three inland freight modes: road, rail and inland waterways. Rail and inland waterways transport is based on movements on national territory, regardless of the nationality of the vehicle or vessel. Road transport is based on all movements of vehicles registered in the reporting country.

### Definition

## Volume of passenger transport relative to GDP



Between 2000 and 2007 GDP grew more than passenger transport volumes in the EU-27, indicating that moderate decoupling has taken place

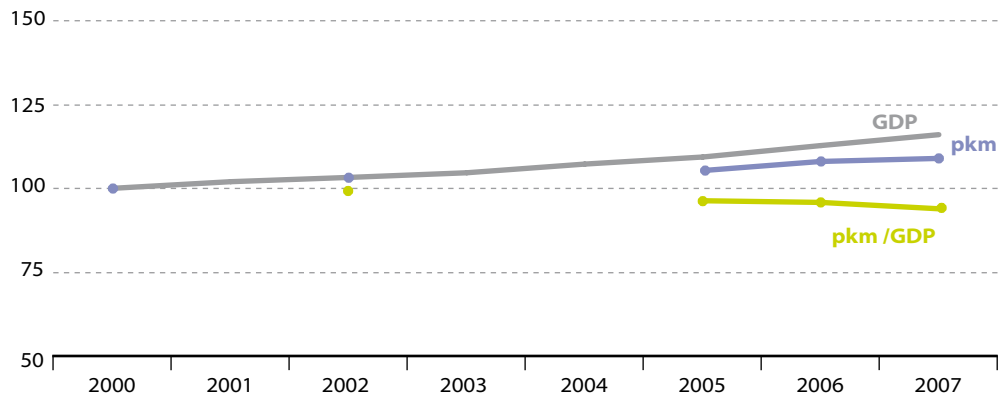
### Analysis

#### Passenger transport growth lower than GDP development

Although passenger transport is still growing in the EU-27, GDP growth exceeds the growth rates of passenger transport volumes. Whilst passenger transport volumes in the EU-27 increased by 0.8 % per year between 2000 and 2007, GDP growth increased by 2.1 % per year. Thus, the ratio between the two decreased by 0.9 % per year and indicates moderate decoupling at the EU-27 level. The same can be observed using longer time-series data for the EU-15 (1995-2007). Possible explanations of the decoupling are the limited road capacity and associated congestion problems and traffic calming initiatives in urban areas.

**Figure 3.10:**  
Volume of passenger transport relative to GDP, EU-27  
(index 2000=100)

Source: Eurostat  
(tsdtr240)



### Indicator relevance

An operational objective of the Sustainable Development Strategy is 'decoupling economic growth and the demand for transport with the aim of reducing environmental impacts'.

### Definition

This indicator is defined as the ratio between the volume of inland passenger transport measured in passenger-kilometres (inland modes) and GDP (deflated). It includes transport on national territory by passenger car, bus and coach, and train.



## Investment in transport infrastructure

Between 2000 and 2006 the share of investments in the infrastructure for the environmentally friendly modes (rail, maritime and inland waterways) fell. Road infrastructure investments remain dominant



Although data for some important countries like the Netherlands are missing and the definition of transport infrastructure investments, maintenance and renewal is not harmonised across the EU, the indicator is able to monitor whether there has been a shift in investment towards the environmentally friendly transport modes.

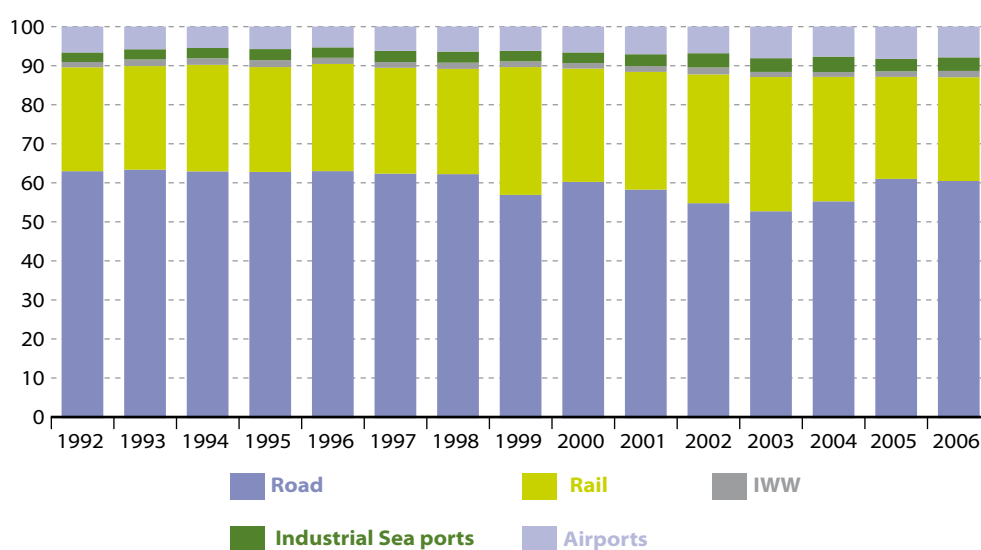
Between 2000 and 2006 the total investment in transport infrastructure expressed in current prices grew by 2.2 % per year. The share of road infrastructure investments fell from 60 % in 2000 to 53 % in 2003, but has since returned to its former level of about 60 % over the period 2005-6. Similarly, investments in airports grew significantly from 6.6 % in 2000 to 7.9 % in 2006.

Mirroring these developments, the share of rail increased between 2000 and 2003 from 29 % to 34 % and then fell to 26 % in 2005-6. Possible reasons for the increasing share of rail investments in the early years of the decade could be the need to catch up with long overdue reinvestments and renewals in existing lines or increasing investments in more costly high-speed rail infrastructure. The shares of investments in inland waterways infrastructure and sea ports both grew slightly over the period 2000 to 2006, from 1.4 % to 1.6 % and from 2.7 % to 3.5 %, respectively.

This indicator is still under development and the analysis and evaluation is therefore preliminary. The evaluation is based on the development of the ratio of the sum of rail, inland waterways and sea port investments and the sum of road and airport investments between 2000 and 2006.

### Analysis

*Smaller share of investment in infrastructure for environmentally friendly modes*



**Figure 3.11:**  
Modal share of investment in transport infrastructure, EU (%)

Source: International Transport Forum, Eurostat

NB: Data are missing for several important countries: see the methodological notes for further information.



**Indicator relevance** The Sustainable Development Strategy has no explicit targets or objectives related to infrastructure investments. However, investments are one way in which the objective of ‘achieving a balanced shift towards environment friendly transport modes’ can be realised. The ‘Greening Transport’ communication also highlights the necessity and importance of interconnection and interoperability of transport infrastructure in connection with the Trans-European Networks for Transport (TEN-T).

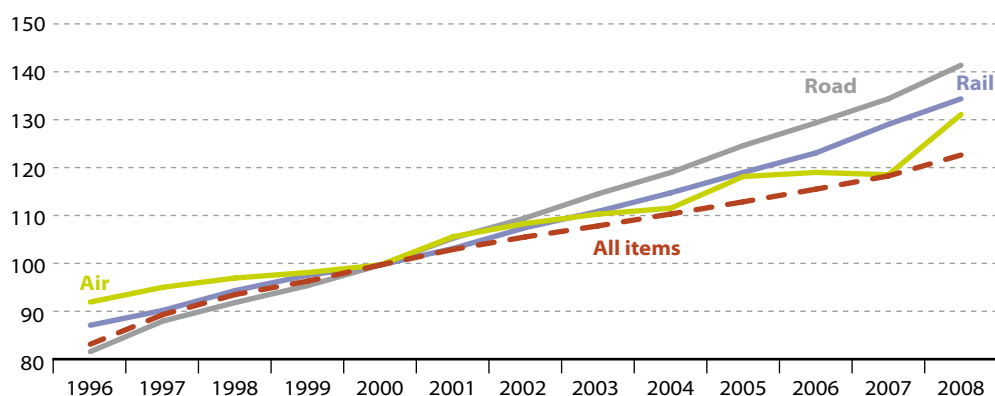
**Definition** This indicator shows total gross investment expenditure (new construction, extension, reconstruction and major repairs) of selected EU-27 Member States for transport infrastructure for road, rail, air transport, sea ports and inland waterways at current prices.

## Passenger transport prices

Since 2000, prices for passenger transport services have been rising faster than the headline inflation rate. Amongst the main transport modes prices for rail and road transport have increased at a faster pace than those for air transport

Between 2000 and 2008 prices for passenger transport by road, rail and air have all risen faster than the headline inflation rate of 2.6 %. Prices for road passenger transport increased by 4.4 % per year on average, compared with rates of 3.8 % for rail and 3.4 % for air. Thus prices for air developed favourably in comparison to road and rail transport. This is partly due to intense competition in the airline sector, reflected by the increasing market shares of the low cost carriers, which has led to a decline in prices, particularly for short and medium haul flights. Exemptions from VAT and mineral oil tax for international air transport leave air transport particularly sensitive to fluctuations in oil price. This is reflected in the large price increases during 2008.

At an average annual rate of 2 %, air transport prices also grew more slowly than either rail or road during the previous period, from 1996 to 2000. Rail transport grew by 3.4 % per year, and only road transport prices grew at a faster average annual rate (5.1 %) than headline inflation (4.6 %).



NB: 1996-98 are estimates.

### Analysis

*Passenger transport prices have been rising faster than the headline inflation rate. Prices for road and rail transport have been increasing faster than those for air transport*

**Figure 3.12:** Harmonised consumer price indices for passenger transport, EU-27 (index 2000 = 100)

Source: Eurostat (tsdtr310)

Ensuring that polluters pay for the damage they cause to human health and the environment is one of the guiding principles of the Sustainable Development Strategy. As the 'Greening transport' communication points out <sup>(11)</sup>, if passengers paid prices that reflected the real costs to society they would be more encouraged to change to 'cleaner vehicles or modes (including walking and cycling), to use less congested infrastructure or to travel at different times'.

### Indicator relevance

This indicator shows the harmonised consumer price indices for passenger transport services, split into road, rail and air, using 2000 as the base year.

### Definition

## People killed in road accidents



Between 2001 and 2007 annual fatalities from road accidents in the EU-27 fell by 11 000, representing a drop of 21 %. However, the objective of halving road fatalities between 2001 and 2010 is still distant and improvements in fatality rates are falling behind the linear target path

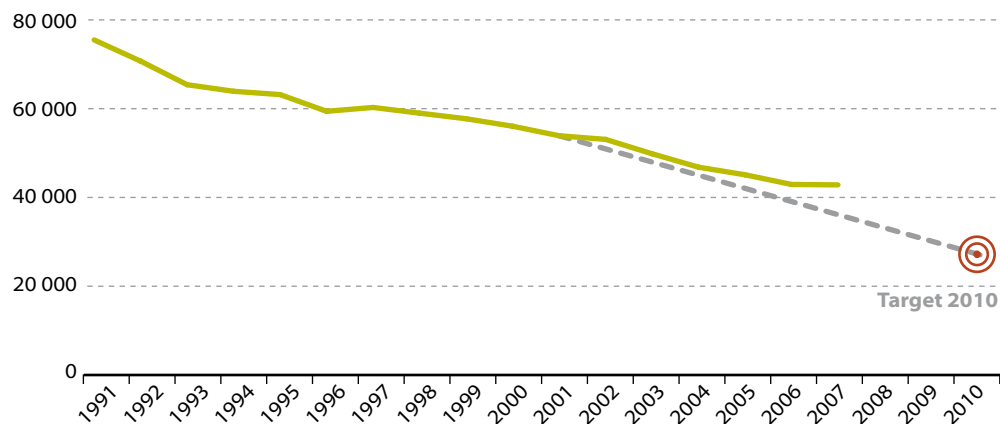
### Analysis

*EU has achieved steady decreases in road fatalities but the target may not be achieved by 2010*

Fatalities due to road accidents in the EU-27 have fallen by approximately 2 000 per year between 1991 and 2007. Between 2001 and 2006 the average number of lives saved per year even increased to 2 200. However, little progress was seen between 2006 and 2007. The number of fatalities in 2007 was approximately 43 000, which lags roughly 2 years behind the linear path towards the EU road safety target to reduce road fatalities by 50 % between 2001 and 2010.

**Figure 3.13:**  
People killed in road accidents, EU-27  
(number of fatalities)

Source: European Commission services, Eurostat (tsdtr420)



### Indicator relevance

Despite the halving of fatalities in road traffic accidents that took place in the EU-27 between 1970 and the early 2000s, road safety is still an issue of major concern with some 43 000 fatalities in the EU-27 during 2007. Many of these fatalities could be avoided. For this reason, the Commission proposed in its 2001 White Paper a target of reducing the number of victims to half of 2001 levels by 2010. This general aim of halving the number of road accident victims in the EU by 2010 has been reaffirmed in the European Road Safety Action Programme <sup>(12)</sup> and its mid-term review <sup>(13)</sup> as well as in the Sustainable Development Strategy and the European Road Safety Charter. Although the original target was set for an EU of 15 Member States, the current target is to reduce road accident deaths in EU-27 to no more than 27 000 by 2010.

### Definition

Fatalities caused by road accidents include drivers and passengers of motorised vehicles and pedal cycles as well as pedestrians, killed within 30 days from the day of the accident. For Member States not using this definition, corrective factors were applied.

## Greenhouse gas emissions from transport

Between 2000 and 2007 EU-27 greenhouse gas emissions from transport (excluding international aviation and maritime) continued growing but at a lower rate than over the previous decade. The growth is dominated by road transport

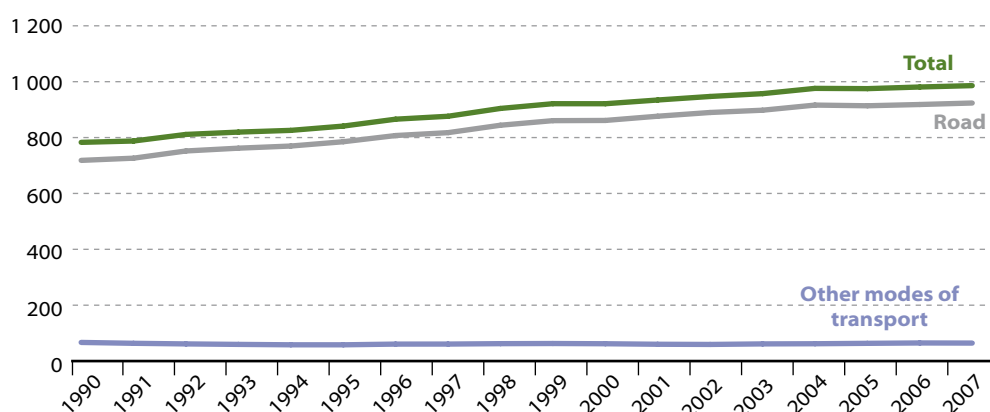


Transport (even when international aviation and maritime are excluded) is an important emitter of greenhouse gases, responsible for a share which has grown from 14 % of total EU-27 emissions in 1990 to 19.5 % in 2007. It is the only major source category currently producing considerably more greenhouse gas emissions than in 1990.

Between 2000 and 2007 the average growth rate of total greenhouse gas emissions from transport in the EU-27 fell to 0.98 % per year compared to 1.6 % over the period 1990 to 2000. Road is the most important driver for this development with a growth rate of 1 % per year compared to 1.8 % per year between 1990 and 2000, and a share which grew to 94 % of the total in 2007.

Greenhouse gas emissions from other transport modes as a whole have grown by 0.6 % per year since 2000, in contrast to an annual decrease of 0.8 % over the previous decade. This rise was due to increases in emissions of domestic aviation and inland navigation as emissions from rail transport continued to decline.

As mentioned in the chapter on climate change and energy, under the Kyoto Protocol transport emissions do not include international aviation and shipping. Their emissions have risen rapidly and between 2000 and 2007, despite a slowdown in international air traffic following the 11 September 2001 attacks, emission from international air transport grew at 2.8 % per year, compared with 5.6 % during the previous decade, and emissions from international maritime have grown at 4.1 % per year since 2000, compared to 1.9 % over the previous decade. Total emissions from these sources amounted to about 315 million tonnes of CO<sub>2</sub> equivalent in 2007, nearly double their level of about 176 million tonnes in 1990.



**Figure 3.14:**  
Greenhouse gas emissions from transport, EU-27 (million tonnes of CO<sub>2</sub> equivalent)

Source: European Environment Agency, Eurostat (tsdtr410)

NB: Other modes of transport comprise mainly rail, inland navigation and domestic aviation, but also include pipelines and ground activities in airports and harbours.

**Indicator relevance**

The European Community is a signatory to the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Under Kyoto the EU-15 is committed to achieving an 8 % reduction of its greenhouse gas emissions, compared with the base year 1990, by 2008-2012. An objective of the Sustainable Development Strategy is to reduce greenhouse gas emissions from transport, which is important because it is the only source category that is emitting more than in 1990, offsetting to a large extent the gains made in other sources, and it is therefore critical to achieving the reduction target.

In March 2007, the EU committed itself to achieving a 20 % reduction in greenhouse gas emissions by 2020 and a 30 % reduction if this is part of an international agreement. The 'Greening transport' communication <sup>(14)</sup> in recognising that transport is the only source category where emissions are expected to continue increasing proposes a number of measures to mitigate this growth.

**Definition**

This indicator shows trends in the greenhouse gas emissions from transport by mode of transport. Each greenhouse gas (CO<sub>2</sub>, methane, and nitrous oxide) is weighted by its global warming potential and aggregated to give total greenhouse gas emissions expressed in terms of CO<sub>2</sub> equivalents.

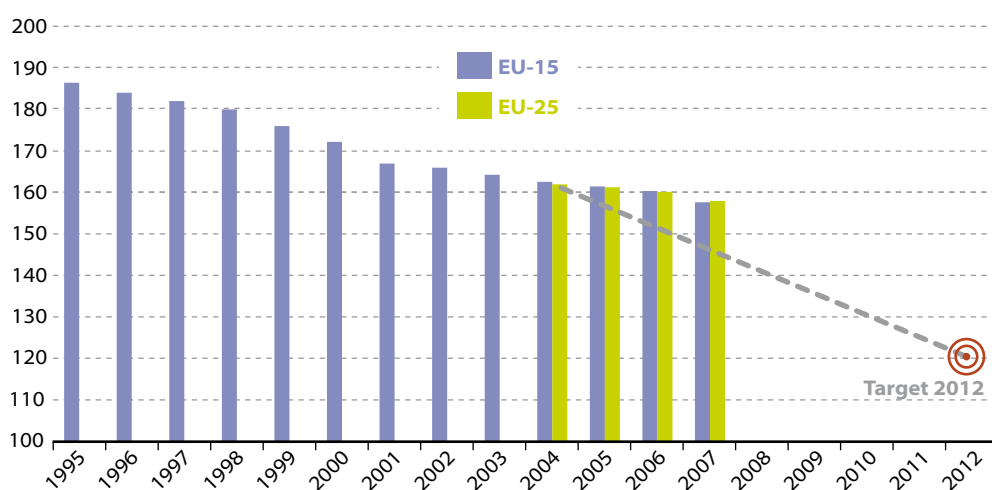
## Average CO<sub>2</sub> emissions per km from new passenger cars

Between 2004 and 2007 the reduction in CO<sub>2</sub> emissions from new passenger cars in EU-25 were made at a far slower pace than what would be necessary to reach the 2012 target of 120 grams per km



The average CO<sub>2</sub> emissions per km of new passenger cars in the EU-15 decreased by 2.1 grams per year on average between 2000 and 2007, reaching 158 grams in 2007. Data for the EU-25 over the period 2004 to 2007 are similar to those for EU-15. The current rate of progress is insufficient to reach the 120 gram target by 2012. However, preliminary data for 2008 suggest that faster progress is now being made.

Despite a shift towards diesel, which produces less CO<sub>2</sub> per km for the same engine power, and the efforts of car makers to improve fuel efficiency, the average greenhouse gas emissions per km of new passenger cars have not been reduced as expected. The reasons for this include consumer preferences for comfort and safety features (and consequent increasing vehicle weights), increasing engine power and four-wheel drives and SUVs.



### Analysis

*Current progress in reducing CO<sub>2</sub> emissions of new passenger cars is insufficient to meet the 2012 target*

**Figure 3.15:** Average CO<sub>2</sub> emissions per km from new passenger cars (g CO<sub>2</sub> per km)

Source: Eurostat (tsdtr450)

The Sustainable Development Strategy states that ‘in line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140 g/km (2008/09) and 120 g/km (2012)’. In 2007 the Commission concluded that the target was unlikely to be met and made a legislative proposal to ensure that, along with other technological improvements and an increased use of biofuels, the Community target of 120 g/km would be met by 2012<sup>(15)</sup>. Legislation has recently been adopted<sup>(16)</sup> on future targets for CO<sub>2</sub> emissions from cars. A target of 130 g/km is to be reached by improvements in vehicle motor technology by 2015, following a gradual phasing-in period from 2012. A further 10 g/km reduction should be obtained by using other technical improvements. Different phasing-in requirements have been defined for each car manufacturer. In addition a long-term target of 95 g CO<sub>2</sub>/km for 2020 was introduced.

### Indicator relevance

This indicator is defined as the average emissions of carbon dioxide per kilometre by new passenger cars sold in a given year.

### Definition



## Emissions of ozone precursors from transport



Since 2000, emissions of ozone precursors from transport have continued to decrease, mainly due to more stringent emission and fuel standards. Between 1990 and 2006, emissions have more than halved

### Analysis

*Emissions of ozone precursors are decreasing at a faster pace than over the previous decade*

Emissions of ozone precursors from transport have been steadily decreasing since 1990. The decrease has been driven by the EURO emission standards for new cars and lorries, the introduction of catalytic converters for cars, improvements of fuel quality, and reduction of evaporation losses during refuelling.

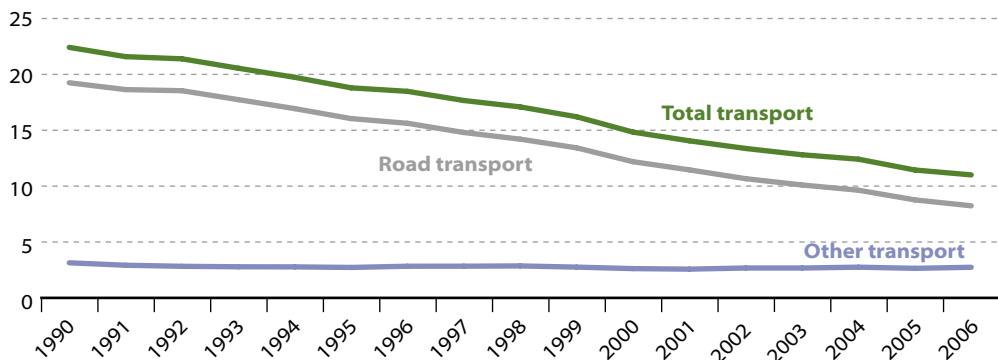
Total ozone precursor emissions from transport in the EU-27 were reduced by 4.9 % per year between 2000 and 2006. This compares favourably with the slightly lower rate of reduction of 4.0 % per year over the previous decade. Since 1990, total EU-27 ozone precursor emissions from transport have been reduced by more than 50 %, and stood at 11 million tonnes in 2006 compared with 22.5 million tonnes in 1990.

Emissions from road transport fell from 19.3 million tonnes in 1990 to 8.3 million tonnes in 2006. This represents an annual average decrease of 6.3 % since 2000.

Despite this considerable reduction in ozone precursor emissions from transport and other sources there are still air quality problems (see chapter on public health), especially in urban areas.

**Figure 3.16:**  
Emissions of ozone precursors from transport, EU-27  
(million tonnes tropospheric ozone-forming potential)

Source: European Environment Agency, Eurostat (tsdtr430)



### Indicator relevance

Ozone is a highly reactive gas that causes or provokes respiratory problems in man and animals. It is also toxic to plants and can lead to leaf damage and defoliation. Tropospheric or ground-level ozone is a 'secondary' pollutant. It is not directly emitted from road vehicles but forms when sufficient concentrations of precursor gases come into contact in the presence of sunlight.

Reducing pollutant emissions from transport to levels that minimise effects on human health and/or the environment' is an operational objective of the Sustainable Development Strategy.

### Definition

This indicator is defined as the aggregated ozone-forming potential of emissions of nitrogen oxides, volatile organic compounds, carbon monoxide and methane from transport.

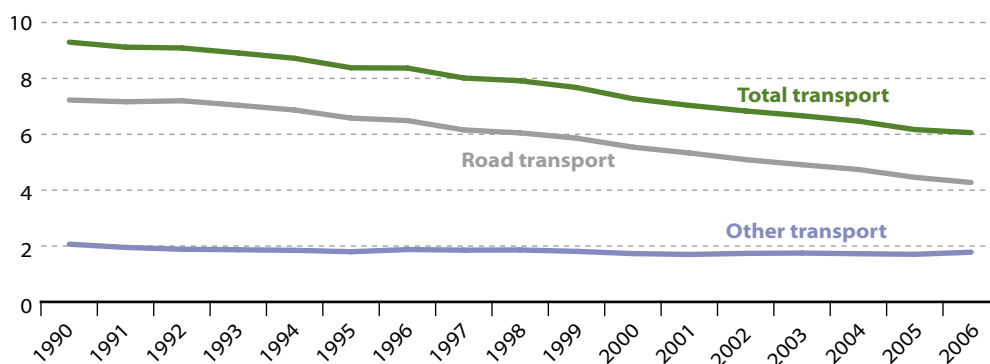
## Emissions of particulate matter from transport

Emissions of particulate matter from transport have falling in the EU-27 at an increasing pace. Between 2000 and 2006 emissions were reduced by more than 20 %. Road transport is the most important contributor to these reductions



Emission of particulate matter from all transport means in the EU-27 decreased by 3.0 % per year between 2000 and 2006, slightly higher than the 2.4 % average over the previous decade. Road emissions decreased at the ever higher rate of 4.2 %, compared with 2.6 % between 1990 and 2000. In contrast other transport modes increased by 0.5 % per year. The decrease of particulate emissions by road transport is the result of more rigorous emission standards for cars and lorries, the greater use of low-sulphur fuels and the gradual, but accelerating, introduction of diesel oxidation catalysts and diesel particulate filters.

Despite the reduced exhaust emissions from road transport, there has been no significant improvement in concentrations of particulate matter in urban areas with high traffic levels (see chapter on public health). In 2007 the Commission proposed tightening some of the emission standards for buses and lorries as well as requiring manufacturers to take the technical measures necessary to ensure that exhaust emissions comply with these limits under normal conditions of use for the normal life of the vehicle<sup>(17)</sup>. Future emission standards for diesel cars (i.e. Euro 5 and Euro 6 standards, which will take effect in 2011 and 2015 respectively) will only be met with a particulate filter.



### Analysis

*Particle emissions have been decreasing especially in road transport*

**Figure 3.17:** Emissions of particulate matter from transport, EU-27 (million tonnes particulate-forming potential)

Source: European Environment Agency, Eurostat (tsdtr440)

Transport, particularly road transport, is one of the main sources of particulate matter. Airborne particulates are believed to contribute to a large number of premature deaths from lung and cardiovascular diseases.

Reducing pollutant emissions from transport to levels that minimise effects on human health and/or the environment<sup>1</sup> is an operational objective of the Sustainable Development Strategy.

This indicator is defined as the aggregated particulate-forming potential of emissions of particulate matter (PM10), nitrogen oxides, sulphur dioxide and ammonia from transport.

### Indicator relevance

### Definition

## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Note on GDP

The deflated GDP figures used for several indicators in this chapter are based on the chain-linked methodology with reference year 2000.

When flows and stocks are valued at the price level in the accounting period they are said to be valued at *current prices*. Valuation at *constant prices* means valuing flows and stocks at the price of a previous period. The purpose of the valuation at constant prices is to assess the dynamics of economic development irrespective of price movements. This is achieved by decomposing changes of values over time into changes in prices and changes in volume. Price, value and volume are related by the equation:

$$\text{Value} = \text{Volume} \times \text{Price}$$

Flows and stocks at constant prices are hence said to be in volume terms. To improve the meaningfulness of volume data in view of rapidly changing price structures, Decision 98/715/EC says down that the base year must be the previous year so that the base year is moving ahead with the observation period. A time-series of volumes is obtained by multiplying successive growth rates at previous year's prices starting from an arbitrary reference year's level. Due to its construction, this is called a chain-linked series. Unlike the choice for a fixed base year, the choice of reference year in chain-linking does not have any effect on growth rates.

### Energy consumption of transport relative to GDP

'Final energy consumption' represents the energy delivered to the final user. Maritime and pipeline transport are not included under final energy consumption. In the case of maritime transport, marine bunkers are considered as exports. In the case of oil and gas pipelines, the energy consumed by compression and pumping stations is considered under consumption of the energy sector rather than as final consumption.

### Modal split of freight transport, and volume of freight transport relative to GDP

The indicator includes transport by the three inland freight modes: road, rail and inland waterways. Rail and inland waterways transport are based on movements on national territory, regardless of the nationality of the vehicle or vessel. Road transport is based on all movements of vehicles registered in the reporting country.

### Modal split of passenger transport, and volume of passenger transport relative to GDP

The indicator includes transport on national territory by passenger car, bus and coach, and train.

### Investment in transport infrastructure

The indicator is compiled from data collected by the International Transport Forum through their questionnaire on investment in transport infrastructure.

Infrastructure investment means total gross investment expenditure (new construction, extension, reconstruction and major repairs) on transport infrastructure (building and other construction, machinery and equipment -- excluding vehicles and rolling stock), and includes both government and private investments.

The following issues should be considered when analysing the data:

- Data availability per country and year varies considerably between modes. There are some natural reasons for that since landlocked countries have no seaports and some countries do not have a river or canal network;
- There are four countries for which there are no data available for all years: Belgium, Greece, Netherlands, Luxembourg, Cyprus;
- For Italy, data for all modes are only available until 2004;
- Data for the Member States of the 2007 enlargement are incomplete. In the case of Bulgaria there are only complete data for 2006 and 2007. In the case of Romania the full data series 1992-2007 is available, with the exception of sea ports;
- For 2007 there are gaps for airport investments in important countries, such as UK, Austria and Denmark. (And consequently 2007 data have not been used for the current publication.)

### Passenger transport prices

The harmonised indices of consumer prices are constructed to measure the changes over time in the prices of consumer goods and services acquired by households. They give comparable measures of inflation in the euro-zone, the EU, the European Economic Area and for other countries including accession and candidate countries. They are calculated according to a harmonised approach and a single set of definitions. The indices have been based on the year 2000 for the purposes of this publication rather than the normal base year of 2005.

### People killed in road accidents

The indicator is derived from the CARE (Community database on Accidents on the Roads in Europe) database.

### Greenhouse gas emissions from transport, emissions of ozone precursors and particulate matter from transport

The source of these data is the European Environment Agency.

For all modes emissions of up- and downstream processes (emissions from fuel production, infrastructure and vehicle production, maintenance and disposal) are not included. For rail transport emissions from electricity production are not included.



### Average CO<sub>2</sub> emissions per km from new passenger cars

Data for the year 2002 onwards are collected by the Commission pursuant to an EU monitoring scheme. For earlier years, data supplied by the automobile constructors' associations have been used.

## Chapter notes

- <sup>(1)</sup> The figures quoted in this paragraph refer to EU-27 and their source is the Eurostat compilation of national accounts. All figures refer to 2007, except for household spending which refers to 2006. The figures of 'about 4 %' for employment based on the total for the sector 'Transport, storage and communications' adjusted to take account of the estimated contribution of 'Post and telecommunications'.
- <sup>(2)</sup> European Commission, *White Paper - European transport policy for 2010: time to decide*, COM(2001) 370.
- <sup>(3)</sup> Commission communication, *Keep Europe moving – Sustainable mobility for our continent – Mid-term review of the European Commission's 2001 transport White Paper*, COM(2006) 314.
- <sup>(4)</sup> Commission communication, *Greening transport*, COM(2008) 433.
- <sup>(5)</sup> Commission communication, *Strategy for the internalisation of external costs*, COM(2008) 435.
- <sup>(6)</sup> Maibach, M., Schreyer, C., Sutter, D., van Essen, H.P., Boon, B.H., Smokers, R., Schrotten, A., Doll, C., Pawlowska, B., Bak, M., *Handbook on estimation of external costs in the transport sector*, CE, Delft, 2008.
- <sup>(7)</sup> *Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles*.
- <sup>(8)</sup> Commission communication, *A sustainable future for transport: Towards an integrated, technology-led and user friendly system*, COM(2009) 279.
- <sup>(9)</sup> European Commission, *Keep Europe moving – Sustainable mobility for our continent – Mid-term review of the European Commission's 2001 transport White Paper*, op. cit., p. 5.
- <sup>(10)</sup> Commission communication, *Action plan for energy efficiency: Realising the potential*, COM(2006) 545.
- <sup>(11)</sup> Commission communication, *Greening Transport*, op. cit., p. 2.
- <sup>(12)</sup> Commission communication, *European road safety action programme - Halving the number of road accident victims in the European Union by 2010: a shared responsibility*, COM(2003) 311.
- <sup>(13)</sup> Commission communication, *European road safety action programme mid-term review*, COM(2006) 74.
- <sup>(14)</sup> Commission communication, *Greening transport*, op. cit.
- <sup>(15)</sup> Commission communication, *Results of the review of the Community strategy to reduce CO<sub>2</sub> emissions from passenger cars and light-commercial vehicles*, COM(2007) 19.
- <sup>(16)</sup> *Regulation (EC) No 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles*.
- <sup>(17)</sup> *Proposal for a Regulation on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information*, COM(2007) 851.





# Sustainable consumption and production













# 4

*'To promote sustainable consumption and production patterns'*

## Overview of main changes


Overall, changes in sustainable consumption and production since 2000 show a rather mixed picture, with some progress being achieved in terms of decoupling environmental degradation from economic growth, particularly for the issues of waste and atmospheric emissions. Consumption patterns, mainly addressing issues of energy consumption, however, show clear unfavourable developments. Data on production patterns, mostly limited to EU-15, show favourable signs as regards the ecological dimension of corporate social responsibility and environment-friendly farming practices.


**Table 4.1: Evaluation of changes in the sustainable consumption and production theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Resource productivity	Resource use and waste	
	 Municipal waste	 Domestic material consumption
		 Recycled and composted municipal waste
		 Atmospheric emissions
	Consumption patterns	
	 Electricity consumption of households	: Number of households
		: Household expenditure
		 Final energy consumption
		 Car ownership
	Production patterns	
	 Environmental management systems*	 Eco-labels*
		 Organic farming*
 Livestock density index		


\* EU-15

**LEGEND:**

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data





### Headline indicator

**Relative decoupling of resource use from GDP** Over the period from 2000 to 2005, high GDP growth rates offset the increases in domestic material consumption, resulting in significant increases of EU-27 resource productivity as well as in a relative decoupling of economic development from resource use.

### Resource use and waste

**Domestic material consumption moderately increases** Domestic material consumption in the EU-27 increased moderately between 2000 and 2005, mainly due to notable increases in direct material input (domestic extraction plus imports). Over this period, the consumption of minerals and fossil fuels increased, whereas biomass consumption experienced ups and downs, but declined overall.

**Municipal waste stable and favourable changes in waste treatment** Following a rise in municipal waste generated per capita in the EU-27 between 1995 and 2000, levels remained rather stable between 2000 and 2007. Developments in municipal waste treatment were favourable, with significant declines in the amount of waste disposed of through land filling and significant increases in recycling and composting.

**Atmospheric emissions decrease substantially** Between 1990 and 2006, the EU-27 substantially reduced its emissions of acidifying substances, ozone precursors and particulate matter. This has resulted in a clear absolute decoupling from GDP growth, although the trend has slowed down since 2000.

### Consumption patterns

**Highest increase in household expenditure for entertainment and clothing** Between 2000 and 2006, EU-27 household expenditure increased steadily, although at a slower rate than over the period from 1995 to 2000. The strongest increases in absolute terms were in expenditure on entertainment and clothing, although spending on communications, a relatively minor item, grew fastest in percentage terms. In parallel, the number of households increased across the EU-27, reaching nearly 200 million in 2006.

**Energy consumption still increased but a turning point may have been reached in 2007** Final energy consumption in the EU-27 continued to grow from 2000 to 2007 mostly due to increasing demand from transport. The electricity consumption of households continued to increase significantly, both before and after 2000. However, the most recent data show a leveling off around 2004-5 and consumption even fell slightly in 2007.

**More and more cars on our roads** Between 2000 and 2006, the number of passenger cars per 1 000 inhabitants in the EU-27 was still on the rise, albeit at a slower pace compared to the period from 1990 and 2000.

### Production patterns

**Considerable increase of both eco-label awards and organisations with a certified environmental management system** European businesses are increasingly integrating social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis; a concept known as 'corporate social responsibility'. The number of organisations in the EU-15 having implemented a certified environmental management system according to the 'Eco-management and audit scheme regulation' rose between 2000 and 2007. In addition, the number of products and services awarded the EU eco-label showed a considerable increase over the same period; however, market shares remain low.

**Signs of agricultural de-intensification** As regards agricultural production practices in the EU-15, the share of organic farming in total utilised agricultural area increased between 2000 and 2007. Between 2003 and 2007, the number of livestock units per hectare in EU-27 showed a favourable decline.





## Background

Consumption and production are often considered as necessary for, and the main driving force of, economic development, thus contributing to the improvement of the quality of life. However, the way in which EU citizens produce and consume can contribute to global warming, pollution, and depletion of natural resources and biodiversity. This may be reinforced by continuously increasing consumption levels resulting from a combination of growing human population and increased per capita consumption, the latter being driven by, *inter alia*, increasing incomes and growing wealth as well as 'rebound effects' <sup>(1)</sup>.

The need for fundamental changes in the way societies produce and consume in order to achieve global sustainable development was recognised at the World Summit on Sustainable Development held in Johannesburg in September 2002. The 'Johannesburg Plan of Implementation' <sup>(2)</sup> called upon 'governments, relevant international organisations, the private sector and all major groups to play an active role in changing unsustainable consumption and production patterns', thus making sustainable consumption and production, alongside with 'poverty eradication' and 'managing the natural resource base of economic and social development', an overarching objective of, and an essential requirement for, sustainable development.

Being dependent on the imports of energy and natural resources, the impacts of the European Union's consumption patterns are felt globally. In addition, an increasing share of the products consumed in Europe is produced outside Europe, resulting in a shift of environmental impacts to other parts of the world and an increase in global energy consumption for the transport of goods. In 2003 the European Council consequently endorsed the agreements made in Johannesburg, underlining 'that the Union is actively committed to keep its leading role in promoting sustainable development at a global scale' by translating these ambitions into concrete actions <sup>(3)</sup>.

The renewed EU Sustainable Development Strategy (EU SDS), adopted in June 2006 <sup>(4)</sup>, identified as a main challenge: 'to gradually change current unsustainable consumption and production patterns and the non-integrated approach to policy-making'. An essential element of the Strategy's key objective 'environmental protection' in this regard is 'promoting sustainable consumption and production to break the link between economic growth and environmental degradation'. This requires adherence to several policy guiding principles of the Strategy such as the involvement of citizens, businesses and social partners in order to make people aware of their responsibilities for the impacts of their consumption and production choices.

'Sustainable consumption and production' was also identified as one of the seven key challenges of the EU SDS, with the overall objective of 'promoting sustainable consumption and production patterns'. The Strategy calls for decoupling economic growth from environmental degradation, improving the environmental and social performance of products and processes, fostering green public procurement, as well as increasing the EU's market share in environmental technologies and eco-innovations. In addition, the key challenge of 'conservation and management of natural resources' emphasises the need to improve resource efficiency and to avoid the generation of waste.

In July 2008, the European Commission published its sustainable consumption and production and sustainable industrial policy action plan <sup>(5)</sup>, following the commitments made in the EU SDS as well as contributing to the UN Marrakech process. The EU SCP action plan affirms that 'the need to move towards more sustainable patterns of consumption and production is more pressing than ever'. It aims at supporting an integrated approach to promote sustainable consumption and production and sustainable industrial policy, both in the EU and internationally.

*Current consumption and production patterns jeopardise the improvement of the quality of life*

*Changing consumption and production patterns is an essential requirement for sustainable development*

*The impacts of the EU's consumption and production patterns are felt globally*

*EU Sustainable Development Strategy: 'promote sustainable consumption and production to break the link between economic growth and environmental degradation'*

*Sustainable consumption and production are mentioned in two of the seven key challenges of the EU Sustainable Development Strategy*



*The EU action plan on the sustainable consumption and production and sustainable industrial policy presents an integrated approach to further promote sustainable consumption and production, both in the EU and internationally*

The core of the action plan is a dynamic framework to improve the energy and environmental performance of products and stimulate the demand for better products and production technologies and helping consumers to make better choices through more coherent and simplified labelling. This is further supported and amplified with actions to achieve leaner production and to address international aspects. The Commission's approach was subsequently confirmed by the Council conclusions adopted on 4 December 2008 <sup>(6)</sup>.

At the international level, the Commission organises SCP roundtables together with UNEP to promote SCP in the emerging economies, as well as regional meetings under the UN Marrakech process. The Commission furthermore helped launch and support the Resource Panel <sup>(7)</sup>, and most recently established SWITCH Asia <sup>(8)</sup> to support the development of SCP projects in the Asian region.

#### Box 4.1: Objectives related to sustainable consumption and production in the Sustainable Development Strategy

Overall objective: To promote sustainable consumption and production patterns

Operational objectives and targets

- Promoting sustainable consumption and production by addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation.

- Improving the environmental and social performance for products and processes and encouraging their uptake by business and consumers.

- Aiming to achieve by 2010 an EU average level of green public procurement (GPP) equal to that currently achieved by the best performing Member States.

- The EU should seek to increase its global market share in the field of environmental technologies and eco-innovations.

## Potential linkages

*Linkages within the sustainable consumption and production theme*

Several linkages exist within the sustainable consumption and production theme. In the sub-theme 'resource use and waste', domestic material consumption (DMC) is used as denominator for calculating the headline indicator of the entire theme, 'resource productivity'. Material consumption directly affects the generation of waste, but is in turn influenced by waste treatment: increasing the share of waste recovered through recycling and composting, reduces the demand for raw materials, thus reducing resource extraction, the most important component of DMC.

*Linkages with the number of households and their expenditure patterns*

The number of households and their expenditure patterns influence all indicators of the sub-theme 'consumption patterns', most prominently the indicator 'electricity consumption of households'. Expenditure on transport goes hand-in-hand with rising motorisation rates and increasing energy demand for transport.

*Linkages with the economic dimension*

Breaking the link between economic growth and resource use is a key objective of the EU SDS. This challenge is addressed by the headline indicator of the theme, 'resource productivity', which can be seen as an aggregate measure of an economy's material efficiency. The headline indicator is complemented by other indicators such as 'energy intensity' or 'atmospheric emissions', all putting resource and energy use as well as environmental degradation in relation to economic development (measured as GDP).

*Linkages with climate change, energy, waste and agriculture*

Sustainable consumption and production patterns are key to tackling climate change. Decreases in energy consumption are linked to the reduction of CO<sub>2</sub> emissions <sup>(9)</sup>. In addition, diversion of biodegradable waste from landfills and increasing recovery through recycling and composting have positive influences on the amount of greenhouse gas emissions <sup>(10)</sup>. Moreover, the numbers of cattle and other livestock also have a significant influence on greenhouse gas and other emissions from agriculture.

Increases in imports and exports of materials result in an increasing demand for freight transport. In addition, rising motorisation rates indicate an increased use of cars in passenger transport, both leading to increased energy consumption in the transport sector, which in turn directly impacts on the emissions of greenhouse gases from transport.

Several linkages exist between consumption and production patterns and environmental degradation as well as public health. In the sub-theme 'resource use and waste', the issues of material consumption (DMC) and waste generation directly address the EU SDS objectives of 'reducing the overall use of non-renewable natural resources and the related environmental impacts of raw material use' and 'avoiding the generation of waste and enhancing efficient use of natural resources'. Moreover, the treatment and disposal of the generated waste may cause environmental pollution and expose humans to harmful substances and bacteria, resulting in negative impacts on their health.

In addition, emissions of acidifying substances, ozone precursors and particulate matter from industry, transport or agriculture can have negative effects on ecosystems, such as acidification, eutrophication or physical damage and reduced growth of plants. In relation to health, exposure to ground level ozone and particulate matter can lead to impacts ranging from minor effects on the respiratory system to premature mortality.

Regarding 'production patterns', both environmental management systems such as the eco-management and audit scheme (EMAS) and eco-labels (e.g. EU flower) aim at helping to improve the environmental performance of processes and products as well as their uptake by consumers. In addition, more environmentally friendly farming practices and extensive livestock rearing have positive effects on biodiversity, landscape preservation and water and soil quality.

Increases in imports of materials have the potential to increase the global impacts of the European Union's consumption patterns, affecting the environment as well as the economy of the exporting countries. There is a risk that positive developments of resource productivity in the EU are, in fact, a result of shifting environmental pressures and impacts to other parts of the world.

*Linkages with climate change, external trade, transport and energy*

*Linkages with environmental issues and health*

*Linkages with global partnership*

#### Further reading

Commission communication, *Sustainable consumption and production and sustainable industrial policy action plan*, COM(2008) 397

Website on *European Sustainable Consumption and Production Policies*, DG Environment

Website on *EMAS – Eco-Management and Audit Scheme*, DG Environment

Website on the *EU Eco-label*, DG Environment

Commission communication, *Taking sustainable use of resources forward: A thematic strategy on the prevention and recycling of waste*, COM(2005) 666

European Environment Agency, *Europe's environment – The fourth assessment*, Luxembourg, Office for Official Publications of the European Union, 2007

Website on the *UN Marrakech Process*, United Nations: DESA/DSD and UNEP



## Resource productivity



Resource productivity increased in the EU-27 between 2000 and 2005. This reflects a more moderate increase in the consumption of domestic material than in the GDP

### Analysis

*Between 2000 and 2005, a relative decoupling of resource use and economic growth occurred*

Resource productivity is a measure of the total amount of materials directly used by an economy (measured as domestic material consumption [DMC]) in relation to economic activity (measured as GDP). It provides insights into whether decoupling between the use of natural resources and economic growth is taking place, thus addressing a key objective of the EU Sustainable Development Strategy <sup>(11)</sup>.

From 2000 to 2003, resource productivity in the EU-27 increased by 2.1 % per year on average. A drop in 2004 reflected a sharp increase in DMC of 4.9 % between 2003 and 2004, which had been moderately decreasing over the previous years.

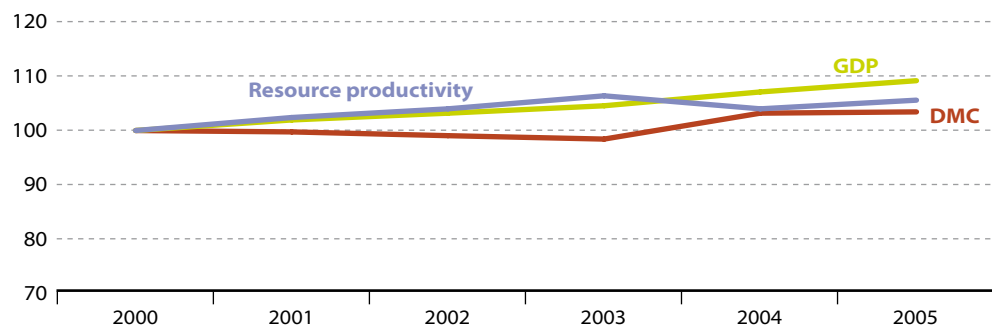
*EU resource productivity increased both before and after 2000*

Overall, between 2000 and 2005, resource productivity in the EU-27 increased at an average rate of 1.1 % per year. At EU-15 level, the average annual growth rate was 1.9 % between 2000 and 2005 and 1.2 % between 1995 and 2000.

It should be noted that these increases in resource productivity were driven by GDP growth rates higher than DMC growth rates. Absolute decoupling between resource use and economic growth, i.e. producing more (in terms of GDP) with less resource input (in terms of DMC), has therefore not taken place <sup>(12)</sup>.

**Figure 4.1:**  
Resource productivity, EU-27 (index 2000=100)

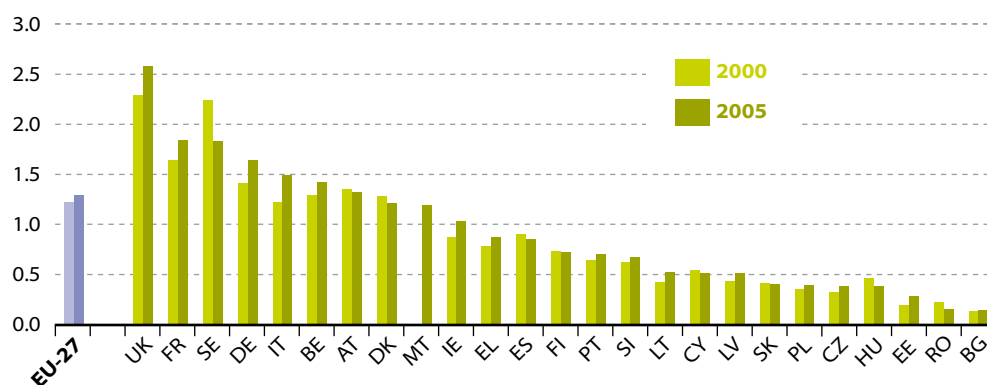
Source: Eurostat (tsdpc100, nama\_gdp\_k)



NB: Resource productivity and DMC are estimates.

*Changes of resource productivity in the Member States range from +8 % to -7 % for the period 2000-2005*

The increase in EU-27 resource productivity between 2000 and 2005 was mainly driven by particularly strong increases in the absolute levels of the UK, Italy, Germany, France and Ireland, all having increased by more than 0.15 EUR/kg, followed by Belgium with 0.13 EUR/kg. More modest gains were made in Lithuania, Greece, Estonia, Latvia, Portugal, the Czech Republic, Slovenia, Poland and Bulgaria. On the other hand, resource productivity fell substantially in Sweden, although it still ranks as one of the best performers. Smaller decreases also took place in Hungary, Denmark, Romania, Spain, Austria, Cyprus, Finland and Slovakia.



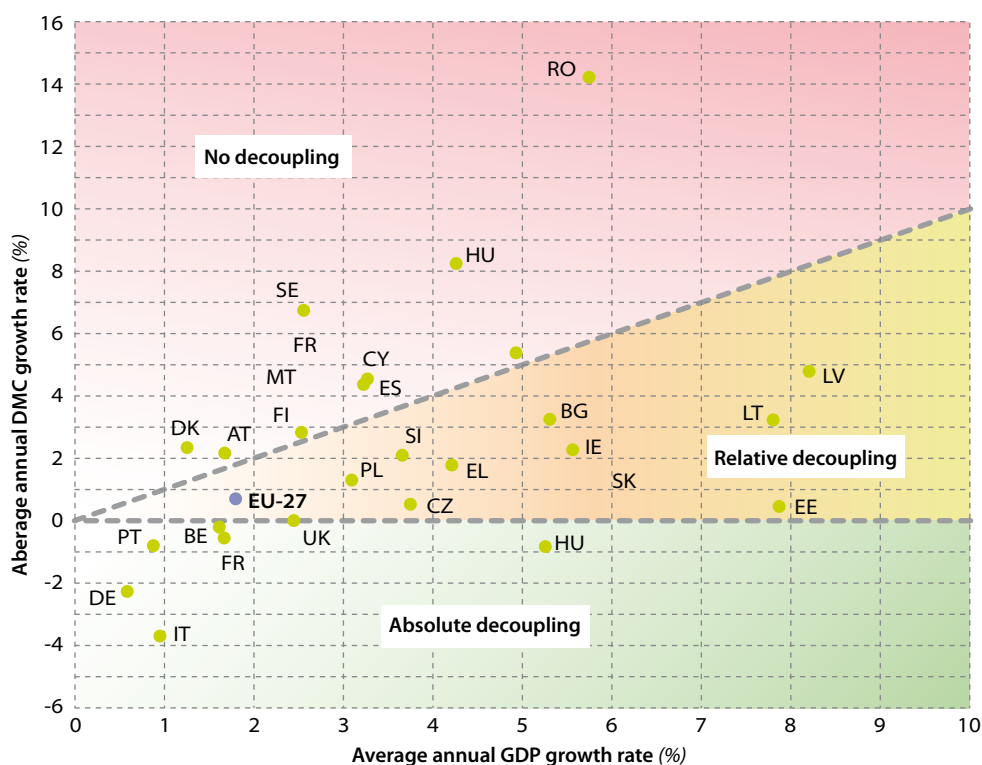
**Figure 4.2:**  
Resource productivity by country (EUR/kg)

Source: Eurostat (tsdpc100)

NB: IT 2004 value used for 2005. EU-27, BE, BG, EE, EL, ES, CY, LV, LT, PL, SI, SK, SE, UK data are estimates, no data for LU and NL.

Plotting the Member States' annual growth rates of DMC against their GDP growth rates for the period 2000 to 2005 reveals that low GDP growth rates are usually accompanied with stable or even decreasing levels of DMC, whereas an increase in GDP growth rates in general corresponds with an increase in DMC growth rates. Notably, most of the countries with the highest resource productivity levels (UK, France, Germany, Italy and Belgium) show increases in resource productivity above the EU average. They also show rather stable or even decreasing DMC combined with comparatively low GDP growth rates. At the other end of the scale, it is evident that the sharp increases in resource productivity in the Baltic countries (Estonia, Lithuania and Latvia) are a result of exceptionally high GDP growth rates accompanied with modest increases in DMC.

*High levels of resource productivity in the Member States are either due to decreasing levels of DMC or exceptionally high GDP growth rates*



**Figure 4.3:**  
Domestic material consumption and GDP by country (growth rates 2000-2005, %)

Source: Eurostat (tsdpc230, nama\_gdp\_k)

NB: IT 2004 value used for 2005. EU-27, BE, BG, EE, EL, ES, CY, LV, LT, PL, SI, SK, SE, UK data are estimates, no data for LU and NL.



**Indicator relevance** Decoupling economic growth from environmental degradation is one of the main objectives of the EU SDS under the key challenge ‘sustainable consumption and production.’ Additionally, under the key challenge ‘conservation and management of natural resources’ the strategy calls for ‘improving resource efficiency, to reduce the overall use of non-renewable natural resources and the related environmental impacts of raw materials use.’

**Definition** Resource productivity is calculated by dividing GDP (deflated) by domestic material consumption (DMC). It is an aggregate measure of the material efficiency of an economy and provides insights into whether decoupling between the use of natural resource and economic growth is taking place.



## Domestic material consumption

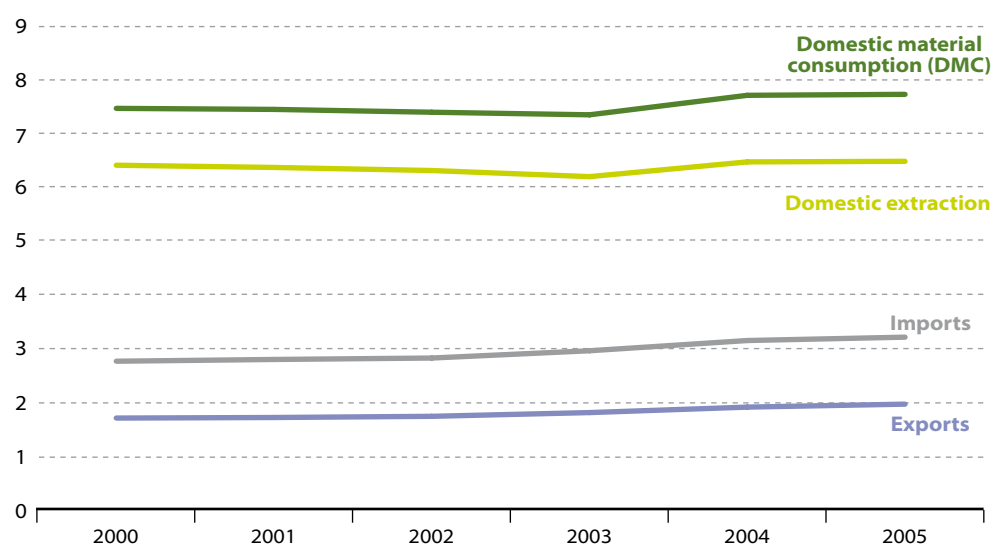
Between 2000 and 2005, domestic material consumption showed a moderate increase. This unfavourable development was driven by significant increases in direct material input (domestic extraction plus imports) that were not offset by the increase in exports



Domestic material consumption (DMC) in the EU-27 increased from 7.47 billion tonnes in 2000 to 7.73 billion tonnes in 2005, representing an increase of 0.7 % per year on average. While DMC decreased between 2000 and 2003, it sharply increased by 4.9 % in 2004. This development mirrors the trends in domestic extraction (i.e. decrease from 2000 to 2003, sharp increase in 2004), whereas imports and exports continuously increased by an average of 3.1 % and 2.9 % per year, respectively, between 2000 and 2005. Particularly strong increases in DMC between 2000 and 2005 were observed in several eastern European countries as well as in Sweden.

### Analysis

*DMC increased by 0.7 % per year on average  
DMC decreased until 2003 and increased in the following years*



NB: Estimates.

**Figure 4.4:**  
Components of  
DMC, EU-27  
(billion tonnes)

Source: Eurostat  
(tsdpc220)

In 2005, minerals contributed to more than half of domestic material consumption. Biomass and fossil fuels counted for the remainder. The increase of DMC between 2000 and 2005 was driven by increases in the consumption of minerals and fossil fuels, growing at average annual rates of 0.9 % and 1.0 %, respectively. In contrast, biomass consumption decreased by 0.1 % per year on average over the same period.

The sharp increase in DMC in 2004 was a result of a more than 13 % rise in biomass consumption, which, however, in 2005 dropped below its 2000 levels. As 2005 showed a significant increase in minerals consumption that led to a global slight increase in DMC. Consumption of minerals and fossil fuels more or less constantly increased over the period 2000-2005.

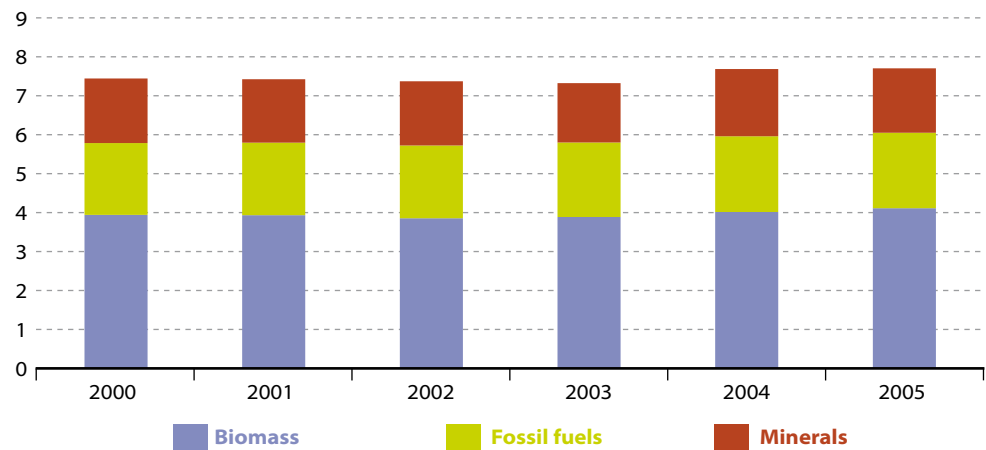
*Consumption of minerals and fossil fuels both increased by about 1 % per year; biomass consumption peaked in 2004, followed by a drop in 2005*





**Figure 4.5:**  
DMC by material,  
EU-27  
(billion tonnes)

Source: Eurostat  
(tsdpc230)



NB: Estimates.

### Indicator relevance

DMC provides an assessment of the absolute level of the use of scarce resources. In environmental terms DMC can be seen as an indicator that reflects all materials emitted from or accumulated in a given region. As accumulated materials (i.e. physical stocks) will eventually turn into emissions and wastes, the value of DMC also indicates the waste potential of a given region.

DMC is used as a proxy for the more relevant indicator, total material consumption (TMC), which includes upstream hidden flows related to imports and exports of raw materials, finished and semi-manufactured products. The EU level TMC is still under development as only a few Member States are currently able to calculate it. In addition, DMC and TMC are only rough proxies for measuring the overall environmental impact of resource use, as materials have very different impacts on the environment. Further development to depict the environmental impacts of material use is needed.

### Definition

Domestic material consumption (DMC) measures the total amount of materials directly used by an economy and is defined as the annual quantity of raw materials extracted from the domestic territory of an economy, plus all physical imports minus all physical exports.



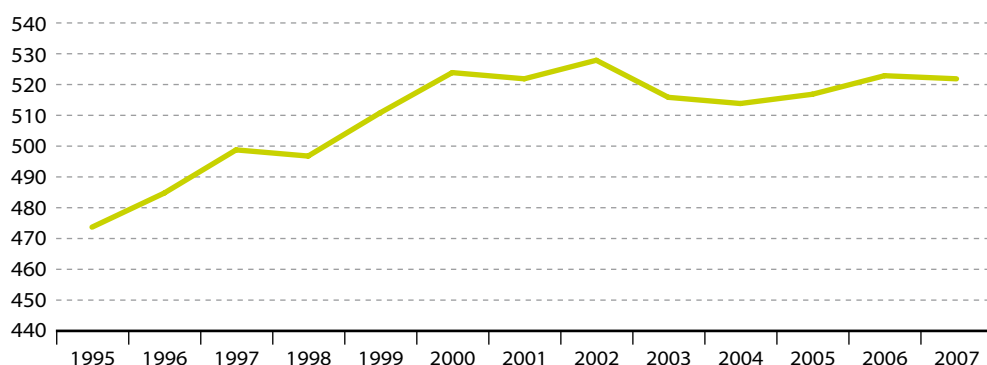
## Municipal waste

The amount of municipal waste generated in the EU-27 fluctuated slightly between 2000 and 2007, showing a peak in 2002 and a trough in 2004. Overall changes were not significant and municipal waste generation remained well above the levels recorded in the previous period



Between 1995 and 2000, the amount of municipal waste collected and disposed of through the waste management system showed a rather unfavourable development, with EU-27 levels increasing by 2 % per year on average. This increase continued until 2002, when 528 kg per capita of municipal waste were collected. Due to a fall in waste generation in subsequent years, levels between 2000 and 2007, in general, showed an insignificant decrease from 524 kg per capita in 2000 to 522 kg per capita in 2007, representing an average annual decline of 0.1 %.

The country breakdown reveals that between 2000 and 2007 municipal waste generation actually increased in all but six Member States, and the EU-aggregate remained stable only because waste generation significantly decreased in Slovenia (-2.1 % per year), Germany (-1.9 % per year), the Czech Republic (-1.8 % per year), Spain (-1.7 % per year) and Bulgaria (-1.4 % per year).



### Analysis

*Waste generation remained rather stable between 2000 and 2007*

*Increases in all but six EU Member States*

**Figure 4.6:**  
Municipal waste generated, EU-27 (kg per capita)

Source: Eurostat (tsdpc210)

Waste represents a considerable loss of resources in the form of both materials and energy. In the EU Sustainable Development Strategy, one of the operational objectives and targets of the key challenge ‘conservation and management of natural resources’ consequently is ‘avoiding the generation of waste and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling’. Measures aimed at reducing the overall environmental impacts of the generation and management of waste are furthermore set out in the thematic strategy on the prevention and recycling of waste and the EU framework directive on waste <sup>(13)</sup>.

‘Municipal waste per capita’ is used in this context as a proxy for ‘total waste generation’, which will be compared to GDP when data are available. It represents only a small part of the total waste (about 10%).

Municipal waste generated consists of waste collected by or on behalf of municipal authorities and disposed of through the waste management system.

### Indicator relevance

### Definition

## Recycled and composted municipal waste



The share of recycled and composted waste increased considerably between 2000 and 2007. Waste incineration too showed significant increases, whereas waste disposed of through landfill declined substantially over the same period

### Analysis

*Between 2000 and 2007, final disposal of waste through landfill decreased by 4.2 % per year*

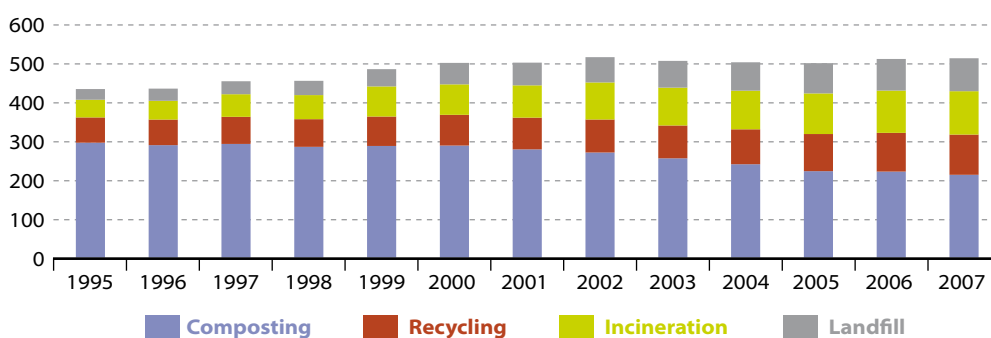
*Recycling and composting reached a share of 37 % in 2007*

Between 2000 and 2007, significant changes took place in the treatment of municipal waste. While in 2000 the amount of waste going to final disposal through landfill made up more than 55 % of total municipal waste generation, this share went down until 2007 to about 40 %, i.e. an average annual decline of 4.2 %. This decrease supports the objectives of the EU directive on the landfill of waste <sup>(14)</sup>.

Over the same period, the amount of waste disposed of through incineration increased by an average rate of 3.9 % per year, raising its share from about 15 % in 2000 to almost 20 % in 2007. Moreover, the share of recycled and composted waste, which accounted for about one-quarter in 2000, increased to more than 37 % in 2007, representing an average annual growth rate of 5.7 % between 2000 and 2007. Taken on its own, the amount of recycled waste increased by 5.2 % per year, and composting increased even more by 6.3 % per year on average.

**Figure 4.7:**  
Municipal waste treatment by method, EU-27 (kg per capita)

Source: Eurostat (tsdpc240)



### Indicator relevance

Solid waste recycling and composting is an important component of sustainable waste management. In addition to reducing the amount of waste that needs to be disposed of, increasing the proportion of waste recycled and composted also reduces the demand for raw materials, leading to a reduction in resource extraction.

EU policy gives preference to waste prevention. Recovery (reuse, recycling, composting and incineration with energy recovery), incineration without energy recovery and landfill, considered as the least environmentally friendly method, come second, third and fourth respectively. The EU Sustainable Development Strategy explicitly seeks to increase resource use efficiency by 'applying the concept of life-cycle thinking and promoting reuse and recycling'.

### Definition

The municipal waste treatment presents the amount of municipal waste recovered through recycling and composting as well as the amount disposed of through landfill and through incineration. The bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included. Recycling means any recovery operation by which waste materials are reprocessed. Composting represents the treatment of biodegradable matter. Data only refer to waste treated within the Member States and does not take into account waste exported.



## Atmospheric emissions

Between 2000 and 2006 emissions of acidifying substances, ozone precursors and particulate matter steadily decreased, albeit at a slower pace than during the 1990s



Acidifying substances, ozone precursors and fine particulates (PM10) can have negative effects on humans, animals, plants, ecosystems and upon the climate, as well as on buildings and materials. Following average annual decreases in the 1990s of 5.7 % in acidifying substances, 3.7 % in ozone precursors and 4.8 % in PM10, emissions during the period 2000 to 2006 continued to decrease, although at slower average rates of 2.2 %, 2.6 % and 2.2 % per year, respectively. Transport is the only sector showing a faster decline of PM10 emissions between 2000 and 2006 (3 %) than in the previous decade (2.4 %).

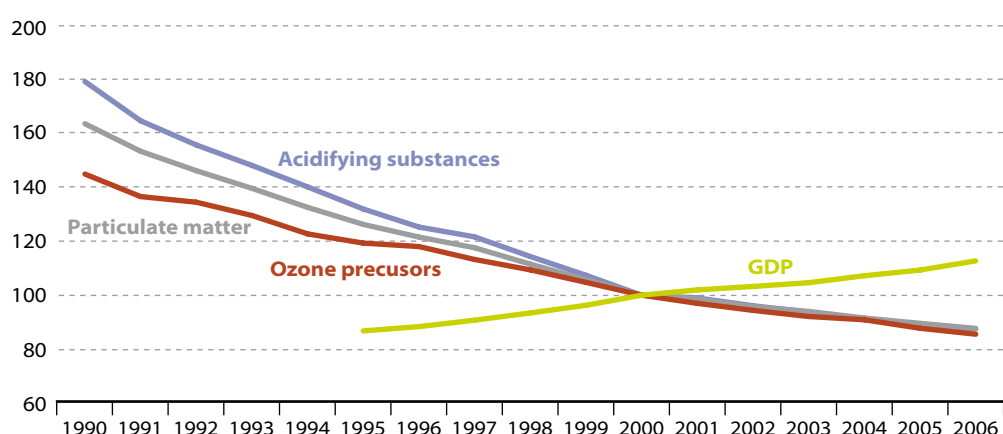
**Acidifying substances:** emissions in 2006 were 12.6 % lower than in 2000, mainly due to decreases in energy and industry of 17.2 %. **Ozone precursors:** emissions decreased by 14.5 % between 2000 and 2006. Emissions from transport only, the main emitting sector of ozone precursors, went down by 25.8 %. **Particulate matter:** emissions decreased by 12.3 % between 2000 and 2006. The largest emitting sector, energy and industry, showed a decrease of 12.8 %.

However, despite these observed reductions in all three types of emissions, levels of air pollution in many areas across Europe still exceed EU air quality limits and targets set to protect human health and the environment.

There is an apparent absolute decoupling of emissions of all three pollutants from economic growth, both before and after 2000. However, both the decrease in emissions of pollutants and the increase in GDP after 2000 slowed down compared to the period 1995 to 2000. One factor in this apparent absolute decoupling is the outsourcing of manufacturing industries to other countries outside Europe.

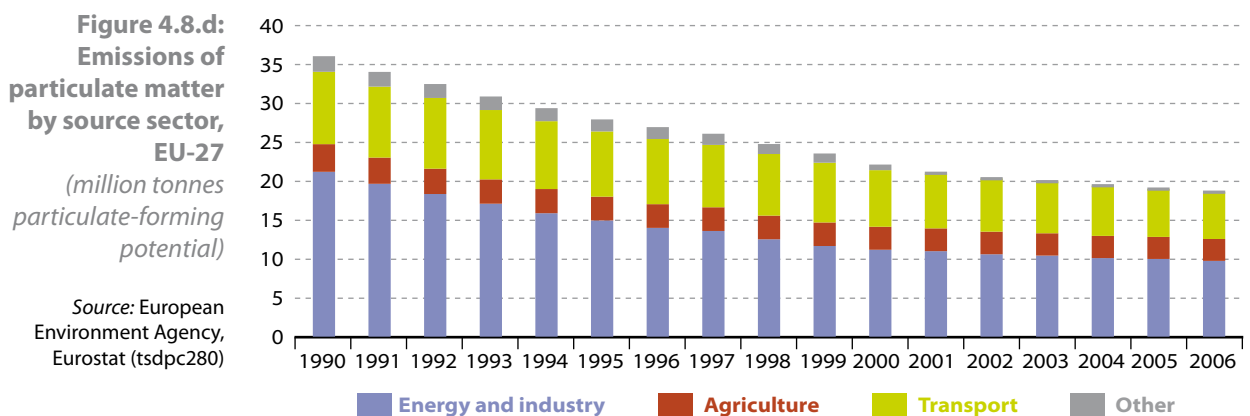
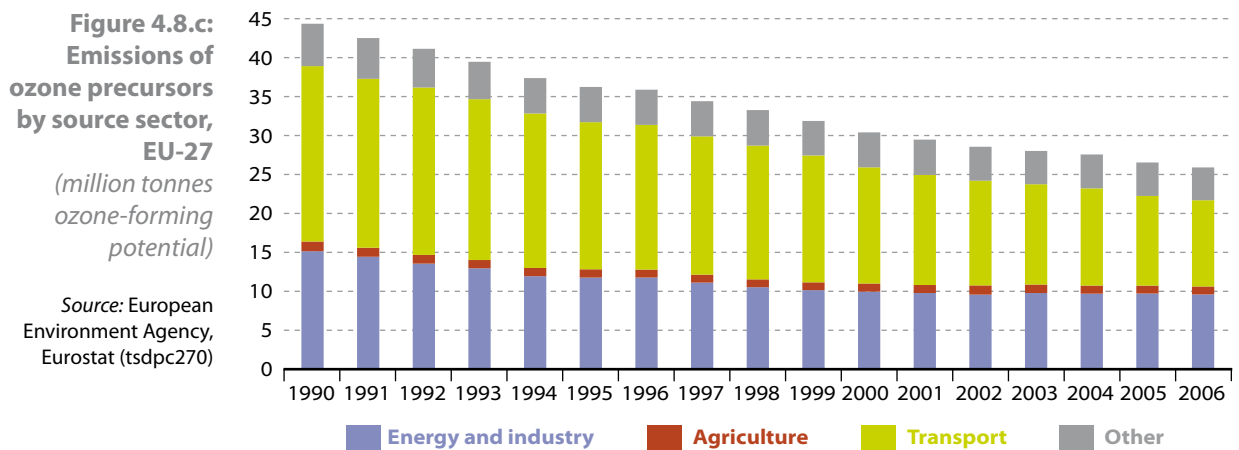
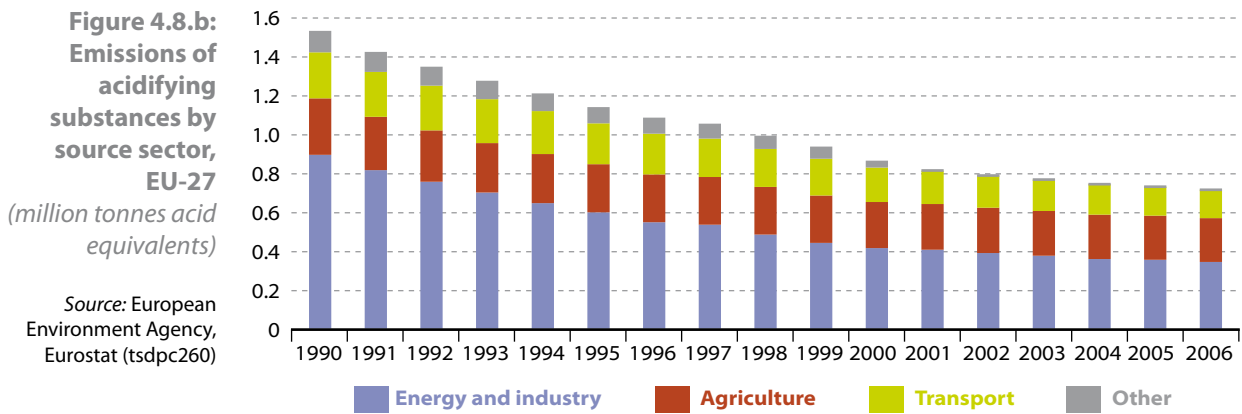
### Analysis

*Atmospheric emissions have been decreasing steadily but more slowly than before 2000*



**Figure 4.8.a:**  
Atmospheric emissions and GDP, EU-27  
(index 2000 = 100)

Source: European Environment Agency, Eurostat (tsdpc260, tsdpc270, tsdpc280, nama\_gdp\_k)





Air pollution damages human health and the environment. In 2005, the Commission formulated a thematic strategy on air pollution <sup>(15)</sup>, setting objectives for health and environment as well as emission reduction targets for the main pollutants. In addition, the EU Directive on national emission ceilings for certain pollutants (NEC Directive) <sup>(16)</sup> sets upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (SO<sub>2</sub>, NO<sub>x</sub>, NMVOC and NH<sub>3</sub>).

Comparing emissions of pollutants to GDP provides an assessment of the objective of the EU Sustainable Development Strategy regarding 'decoupling economic growth from environmental degradation'.

### Indicator relevance

The atmospheric emissions indicators track trends in anthropogenic atmospheric emissions of acidifying substances (SO<sub>2</sub>, NO<sub>x</sub> and NH<sub>3</sub>), ozone precursors (NO<sub>x</sub>, CO, CH<sub>4</sub>, and NMVOC), and primary particles and secondary particulate precursors (SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, PM10), by sector.

### Definition





## Number of households

The number of households in the EU-27 increased by 5 % between 2003 and 2007, reaching almost 200 million households in 2007

### Analysis

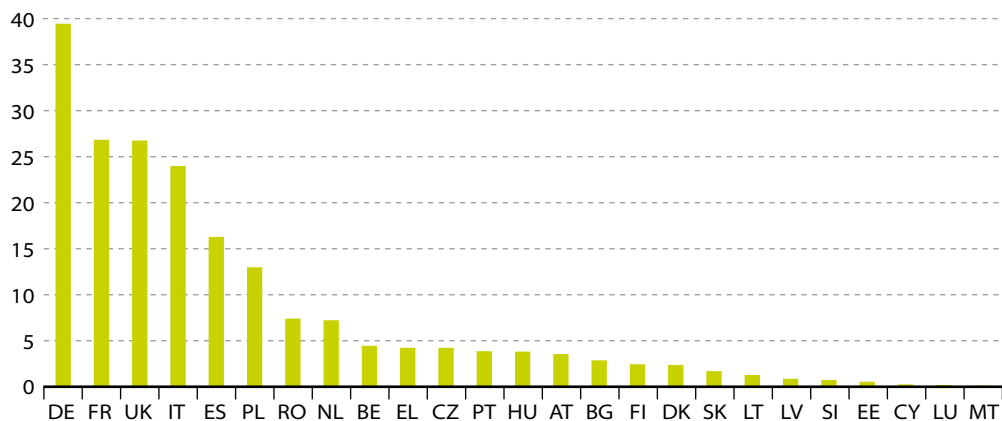
*Numbers of households are increasing in the EU-27 mainly as a result of declining household sizes*

The number of households in the EU and their composition has changed over the last decades. In 2007, there were more households than in 2000 (2001 for Latvia) in all Member States for which data are available, with the exception of Latvia and Romania. Between 2000 and 2007, the highest increase (+ 22.2 %) could be observed in Spain

Overall, the increasing number of households is mainly a result of declining household sizes. In 2007, the largest group of households in the EU-27 were two adults living with children (33 %), followed by two adults living without children (27 %) then three or more adults without children (15 %) and single persons without children (14 %). Single adults with children made up 5 % of all households <sup>(17)</sup>.

**Figure 4.9:**  
Number of households, EU-27, 2007 (millions)

Source: Eurostat (tsdpc510)



NB: DK: data from 2006.

### Indicator relevance

The number of households and their composition (whether including couples or single adults, and whether adults living with or without dependent children), have changed over the last decades. These changes have far-reaching social, economic and environmental consequences and directly influence households' consumption patterns in all domains, such as land use, quantities of goods needed, total energy and water consumption, and transport, as well as waste generation.

Number of households is used as contextual indicator for the sub-theme 'consumption patterns' and is, therefore, not evaluated (i.e. no weather symbol is shown).

### Definition

The number of households represents the number of private households. Private households are either a one-person household or a multi-person household, i.e. a group of two or more persons who combine to occupy the whole part or part of a housing unit and to provide themselves with food and possibly other essentials for living.

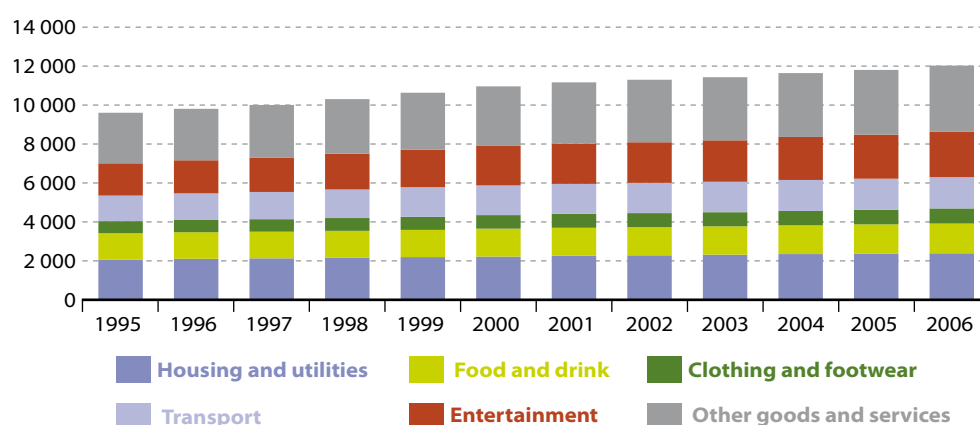


## Household expenditure

Household expenditure increased continuously between 2000 and 2006, with increases being highest for entertainment and clothing in absolute terms

Between 2000 and 2006, per capita household expenditure in the EU-27 increased by 9.7 %, from EUR 10 928 to EUR 11 987. Of the major items of expenditure, the biggest increases were in entertainment (14.7 %) and clothing (11.3 %). However, the minor items of expenditure grouped together here as 'other goods and services' also grew by 11.1 %. The major rise in this category was expenditure on communications which grew by nearly 50 % between 2000 and 2006, although this item represented only EUR 410 in absolute terms. Expenditure on alcohol, tobacco and narcotics, another minor item, actually fell by 5.1 % over this period to EUR 382.

The average annual increase in expenditure between 2000 and 2006 (1.6 % per year) was lower than between 1995 and 2000, when overall expenditure in the EU-27 rose by 2.7 % per year on average. Again the biggest rise in expenditure over the period 1995 to 2000 was for communications. Expenditure for transport increased by 0.9 % per year on average between 2000 and 2006, compared to an increase of 3.0 % per year during the previous period from 1995 to 2000.



### Analysis

*Household expenditure has been steadily increasing, especially for entertainment and clothing*

*Expenditure on transport increased more slowly after 2000*

**Figure 4.10:** Household expenditure per inhabitant, by category, EU-27 (EUR)

Source: Eurostat (tsdpc520)

Households play an important role in the final choice about the consumption of goods and services. Although each household has a relatively smaller environmental impact than production activities, millions of households in Europe are major contributors to environmental problems such as climate change, air pollution, water pollution, land use and waste.

The EU Sustainable Development Strategy emphasises the overall objective 'to promote sustainable consumption and production patterns' and lists actions aimed at raising awareness among citizens and changing unsustainable consumption habits, amongst others. Consumption expenditure gives an indication of the structure of these consumption patterns and the associated pressures posed on the environment.

Household expenditure refers to any spending done by a person living alone or by a group of people living together in shared accommodation and with common domestic expenses. It includes expenditure incurred on the domestic territory (by residents and non-residents) for the direct satisfaction of individual needs and covers the purchase of goods and services, the consumption of own production (such as garden produce) and the imputed rent of owner-occupied dwellings.

### Indicator relevance

### Definition



## Electricity consumption of households



Between 2000 and 2007 electricity consumption of households increased considerably in the EU-27. Nevertheless there was a slight decrease in 2007

### Analysis

*The electricity consumption of households is rising in the EU-27 and in most Member States*

*Considerable increase in 2003 but a slight decrease in 2007*

*Between 2000 and 2007, decrease in four Member States and increase of more than 50 % in three Member States*

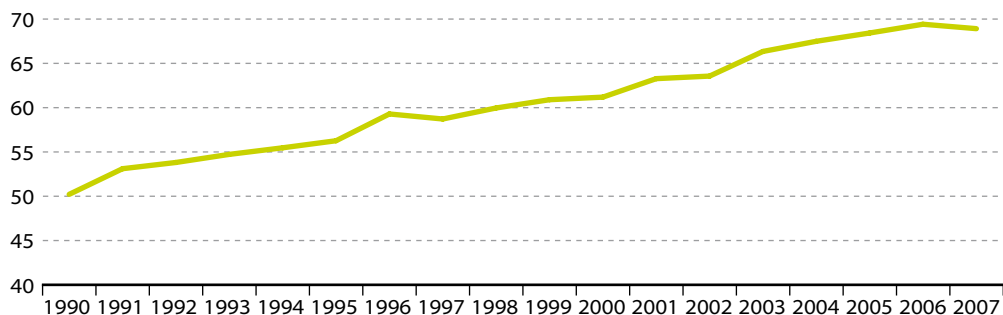
The electricity consumption of households in the EU-27 accounted for almost 69 million tonnes of oil equivalent (toe) in 2007. In the previous decade from 1990 to 2000, levels rose at an average rate of 2 % per year. The increase continued between 2000 and 2007, with a slightly lower, but still significantly unfavourable, average annual growth rate of 1.7 %. A slight decrease (0.7 %) could nevertheless be noted in 2007 compared to 2006.

This unfavourable development can be attributed to the so-called 'rebound effect', that is, efficiency gains were offset by rising demand resulting from behavioural changes. In addition to the growing number of households, the increase in electricity consumption was driven by increased ownership of standard appliances and new electrical devices, in particular of air-conditioning units<sup>(18)</sup>. In this respect, the heat wave in 2003 may have contributed to the 4.4 % increase in electricity consumption compared to 2002.

In all but four Member States (Belgium, Bulgaria, Slovakia and Sweden) the electricity consumption of households was higher in 2007 than in 2000. While in 2007, 19 of the 27 Member States consumed only 21 % of the total between them, the combined consumption of France, Germany and the UK amounted to about half of the total electricity consumption in the EU-27. The largest relative increases between 2000 and 2007 were in Spain, Cyprus and Latvia, with consumption rising by more than 50 % over 7 years. It should be borne in mind in interpreting consumption and growth rates at country level that the extent to which electricity is used for heating and cooling, as well as for other uses, varies considerably across Member States.

**Figure 4.11:**  
Electricity consumption of households, EU-27 (million tonnes of oil equivalent)

Source: Eurostat (tsdpc310)



NB: Provisional value 2005 – 2007.

### Indicator relevance

Energy intensive consumption patterns, reflected in growing electricity consumption of households, contribute to the persistence of unsustainable trends in energy use. The EU Sustainable Development Strategy aims to raise awareness among citizens and to change unsustainable consumption habits.

### Definition

The electricity consumption of households represents the total quantity of electricity consumed by all households. Household consumption covers all uses of electricity for space and water heating and all electrical appliances.



## Final energy consumption

Between 2000 and 2007 final energy consumption increased moderately. The largest increases took place in transport and services

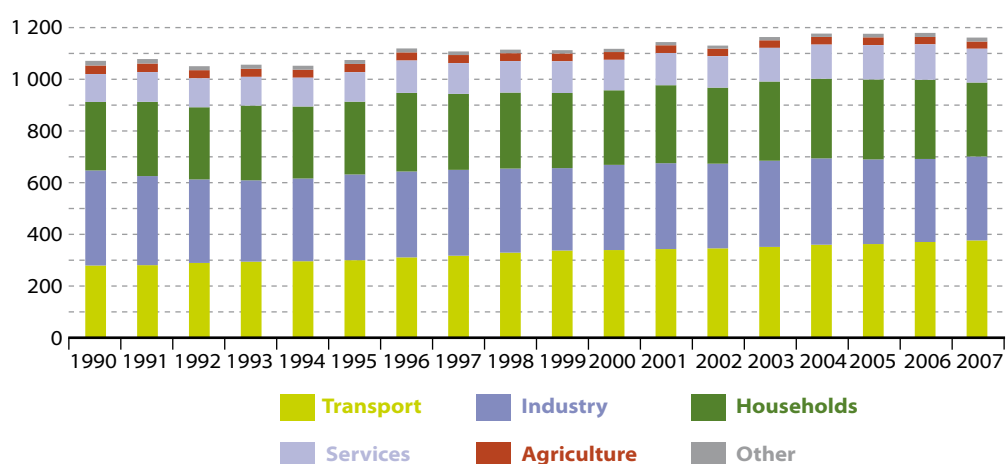


Between 2000 and 2007, final energy consumption slightly increased from 1 114 to 1 158 million tonnes of oil equivalent (toe), i.e. an increase of 0.6 % per year on average (1.3 % between 2000 and 2004). This represents an acceleration compared to the previous growth rate of 0.4 % between 1990 and 2000. Nevertheless, a turning point may have been reached as final energy consumption stabilised between 2004 and 2006 and fell by 1.5 % in 2007.

Between 2000 and 2007, final energy consumption increased most in the transport and the services sectors, both showing average annual growth rates of 1.5 %. This is consistent with the longer term development, with 2007 consumption levels of transport and services being 34 % and 21 %, respectively, above their 1990 levels. In contrast, final energy consumption continuously decreased in industry and agriculture (both before and after 2000). Consumption of households increased by 15.6 % between 1990 and 2003 but then showed a decrease (-6.6 %) between 2003 and 2007.

### Analysis

*Energy consumption increased by 0.6 % per year between 2000 and 2007 but a turning point may have been reached*



**Figure 4.12:** Final energy consumption, by sector, EU-27 (million tonnes of oil equivalent)

Source: Eurostat (tsdpc320)

NB: Provisional values: Industry, 2000-2007; Transport, 2002, 2006, 2007; Households, Agriculture, Services, Other sectors, 2002, 2005, 2006, 2007

Energy is essential for economic and social development. However, its production and use, especially when based on non-renewable sources, lead to emissions of greenhouse gases and other harmful substances, deplete the earth's limited stock of fossil fuels and contribute to the EU's dependence on other regions.

### Indicator relevance

The EU Sustainable Development Strategy includes the objective of 'reaching an overall saving of 9 % of final energy consumption over 9 years until 2017'.

The final energy consumption by sector expresses the sum of the energy supplied to the final consumer's door for all energy uses broken down by sector (transport, industry, households, services, agriculture, other).

### Definition



## Car ownership



Between 2000 and 2006 the number of passenger cars per 1 000 inhabitants in the EU-27 increased significantly. The highest increases could be observed in eastern Europe and the Baltic region

### Analysis

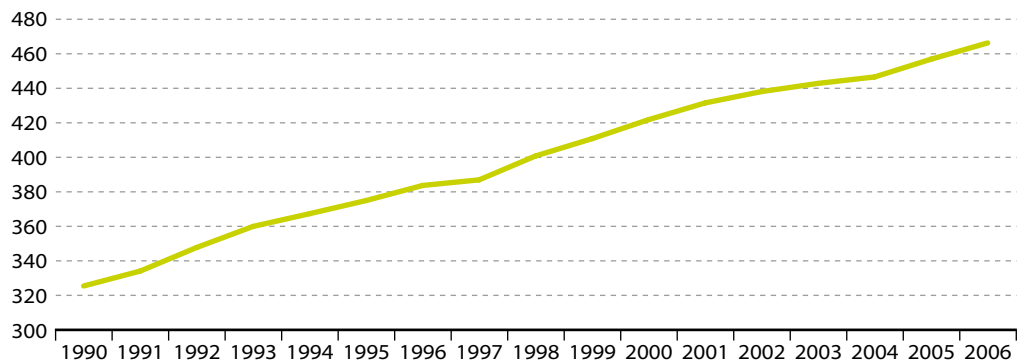
*Motorisation rates are constantly increasing but at a slower pace than before 2000*

In the EU-27 the number of passenger cars per 1 000 inhabitants grew from 422 in 2000 to 466 in 2006, which represents an increase of 1.7 % per year on average. In the previous decade, the motorisation rate increased at the higher pace of 2.7 % per year on average.

In 2006, at country level, the number of passenger cars per 1 000 inhabitants varied between 167 in Romania to 656 in Luxembourg. There was more than one car for every two inhabitants (more than 500 cars per 1 000 inhabitants) in Luxembourg, Italy, Germany, Malta and Austria. Between 1995 and 2006, the motorisation rate increased by more than 80% in Latvia, Lithuania, Greece and Poland.

**Figure 4.13:** Motorisation rate, EU-27 (passenger cars per 1 000 inhabitants)

Source: European Commission services, Eurostat (tsdpc340)



### Indicator relevance

The travel behaviour of consumers has a great influence on many aspects of sustainable development. The degree of dependence on passenger cars is of great significance in this respect. Passenger cars provide great flexibility to access work and essential services such as education, health and shops, as well as for cultural and social activities, tourism and holidays. But road vehicles also produce pollution, noise and waste, consume large quantities of energy, and are responsible for accidents and impacts on human health. These pressures and impacts are greater for cars, if occupancy rates are low, than for an equivalent journey by bus, tram or train, where occupancy rates are generally higher.

It should nevertheless be borne in mind that adverse environmental effects are mainly related to the use of cars, while the motorisation rate only measures car ownership. Furthermore, this indicator makes no distinction between the types of vehicles, e.g. cars with 'green technologies'. For more information on the impacts of transport, see the chapter on 'sustainable transport'.

### Definition

Motorisation rate refers to the number of passenger cars per 1 000 inhabitants. A passenger car is a road motor vehicle, other than a motorcycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver); the term 'passenger car' therefore covers micro-cars (need no permit to be driven), taxis and hired passenger cars, provided that they have fewer than 10 seats; this category may also include pick-ups.



## Environmental management systems

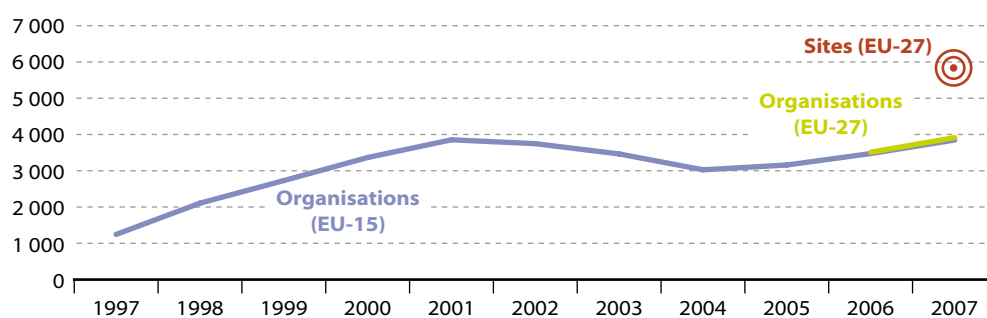
Between 2000 and 2007, the number of organisations in the EU-15 certified according to the Eco-Management and Audit Scheme globally increased. After a period of decline between 2001 and 2004, certifications are again on the rise due to high growth rates in southern European countries



In the EU-15, the number of organisations having in place an environmental management system according to the 'Eco-Management and Audit Scheme' (EMAS) regulation has substantially grown since it was introduced in 1995. Between 2000 and 2007, registrations increased from 3 358 to 3 842 organisations, representing an average annual growth rate of 1.9 %. The decline observable from 2001 to 2004 is mostly explained by a revision of the scheme in 2001. Since then, corporate registrations are possible and organisations can register all their sites under one registration number.

In 2000, 80 % of the EMAS-registered organisations in the EU-15 were recorded in two Member States (71.3 % in Germany and 8.8 % in Austria). In 2007, 87.9 % were counted in four Member States (38.1% in Germany, 23.6 % in Spain, 19.7 % in Italy and 6.6 % in Austria). In 2007, the number of EMAS-registered organisations in the 12 most recent EU Member States was still marginal.

In order to give a more accurate picture of EMAS development, the European Commission started to collect also the number of sites in 2004, resulting in a total of 5 888 sites in the EU-27 certified according to EMAS in 2007.



### Analysis

*EMAS registrations in EU-15 decreased between 2001 and 2004 due to a revision of the scheme*

*In 2007, Germany, Spain, Italy and Austria counted for 87.9 % of the total EU-15 registrations (86.4 % of the total EU-27)*

**Figure 4.14:** Organisations and sites with EMAS registration (number)

Source: European Commission services, Eurostat (tsdpc410)

EMAS is an important instrument addressing the ecological dimension of corporate social responsibility. It is aimed at helping to improve the environmental performance of European companies on a process level.

The EU Sustainable Development Strategy asks for increasing 'awareness and knowledge of corporate social and environmental responsibility and accountability'. It calls for the involvement of businesses and social partners in order 'to foster cooperation and common responsibilities to achieve sustainable consumption and production'.

This indicator is defined as the number of EMAS-registered organisations and sites. EMAS is a voluntary environmental management system implemented by companies and other organisations from all sectors of economic activity including local authorities, to evaluate, report on and improve their environmental performance.

### Indicator relevance

### Definition

## Eco-labels



Between 2000 and 2007, the number of eco-labelled products and services was multiplied by 9.3 in the EU-15

### Analysis

*The flower is blooming! Since 2000, EU-15 eco-label awards have increased by 37 % per year*

*Half of the Ecolabel products held by Italy and France*

*Eco-labelled products still have a very small EU market share*

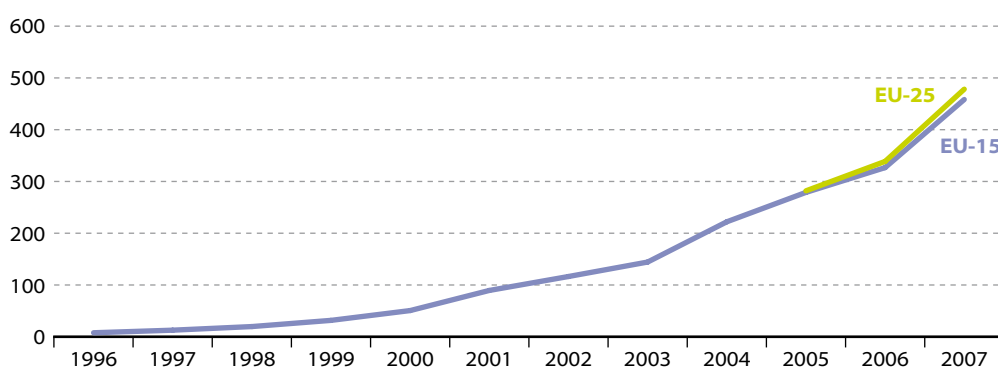
The EU eco-label (or EU flower) is a voluntary label intended to inform consumers about products that perform at an improved level at which many environmental criteria are considered over the whole life-cycle<sup>(19)</sup>. Starting with just six awards in 1996, the number of EU eco-labelled products and services has steadily increased since then, reaching 458 in the EU-15 in 2007. Since 2000, eco-label awards in the EU-15 have increased at an average rate of 39 % per year, compared to an average annual increase of nearly 70 % between 1996 and 2000.

At end-August 2009<sup>(20)</sup>, tourist accommodation and camp site services represented 42 % of the total. They were followed by cleaning products (25 %), with textile products and indoor and outdoor paints and varnishes each representing 10%. At country level, Italy had the greatest number of Ecolabel holders with about 33 % of the total for EU-27; France had the next largest number with 18 %. All other EU Member States exceeded 10 % of the total. And only in three countries, Bulgaria, Lithuania and Luxembourg, were there no eco-labels registered.

However, the Commission's 2008 impact assessment accompanying the proposal for a regulation on the ecolabel scheme concedes that 'while the scheme continues to grow steadily with around EUR 800 million of sales of eco-labelled products, it still commands a very small EU market share in relative terms'<sup>(21)</sup>. In addition, according to a Eurobarometer survey which took place in 2009, 61% of EU citizens admitted never having seen - or heard about - the EU Ecolabel and its Flower logo<sup>(22)</sup>.

**Figure 4.15:**  
Eco-label awards  
(total number)

Source: European Commission services, Eurostat (tsdpc420)



### Indicator relevance

The indicator tracks the success of the EU eco-label, which, along with environmental management schemes (see previous indicator), is an important tool in terms of corporate social responsibility, contributing to sustainable development at both business and consumer level. It also encourages the manufacturing of products and services with reduced impact on the environment by providing consumers with information on the consequences of their consumption





choices and behaviour, and thus enhancing demand for and use of environmentally sounder products. There are already 26 product groups covering twelve major areas of manufacturing and one service activity.

Many Member States have developed effective eco-labelling schemes such as the German Blue Angel or the Nordic Swan schemes, all of which are operating alongside the EU scheme.

In addition to voluntary labelling, current legislation <sup>(23)</sup> imposes some labelling constraints on European producers and retailers, mainly concerning electrical equipment. In order to better inform and protect consumers, the EU Sustainable Development Strategy asks the Commission to ‘propose extending performance labelling schemes [...] to other groups of environmentally harmful products’.

The indicator is defined as the number of eco-label or ‘EU flower’ awards in EU Member States. The Community eco-label is awarded to products and services with reduced environmental impacts.

#### Definition



## Organic farming



Between 2000 and 2007, the share of agriculture area occupied by organic farming in the EU-15 increased considerably from 3 % to 4.7 %

### Analysis

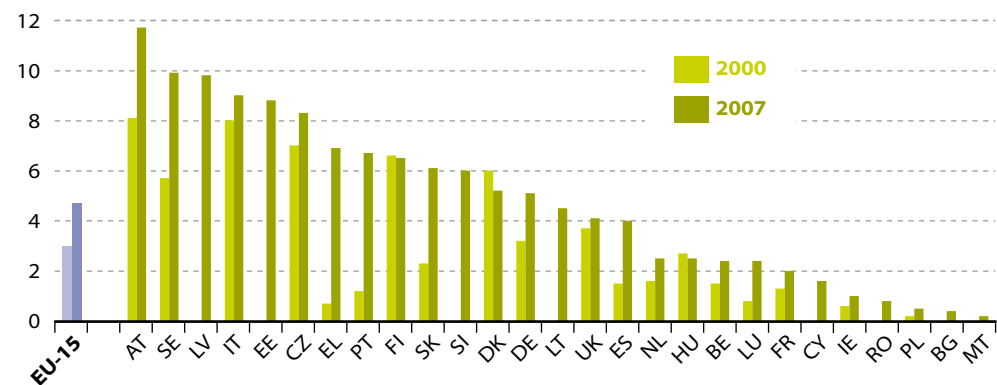
*Between 2000 and 2007, the share of organic farming in the EU-15 increased by 56.7 %*

In the EU-15, the share of organic farming in utilised agricultural area (UAA) increased from 3 % to 4.7 % between 2000 and 2007, representing a progression of 6.6 % per year on average (in total 56.7 % progression over the 7 years).

Looking at the country breakdown, the largest increases between 2000 and 2007 could be observed in Greece (+885 %), Portugal (+458 %), Luxembourg (+200 %) and Spain (+167 %). Austria still held the largest share of organic farming in UAA, with 11.7 % in 2007, followed by Sweden (9.9 %), Latvia (9.8 %) and Italy (9 %). Overall, the organic farming sector increased over this period in all countries for which data are available, with the exception of Denmark (-13.3 %), Finland (-1.5 %), and Hungary (-7.4 %).

**Figure 4.16:**  
Area under organic farming (%)

Source: Eurostat (tsdpc440)



NB: 2003 data from CZ, HU, PL and SK used for 2000. For 2000 EU-15 and FR are estimates; for 2007 EU-15, DK, LU, MT, PL and RO are estimates.

### Indicator relevance

Increasing consumer awareness on health issues and on environmental concerns has contributed to the growth in the demand for organic products over the last few years. The EU Sustainable Development Strategy encourages Member States to 'support information campaigns with retailers and other organisations to promote sustainable products, inter alia, products that stem from organic farming as well as environmentally sound products'. Moreover, the Strategy calls for Member States and the Commission to 'make further efforts through the new programmes for rural development, the new legislative frameworks for organic farming and animal welfare as well as the biomass action plan'.

### Definition

This indicator is defined as the share of total utilised agricultural area (UAA) occupied by organic farming (existing organically farmed areas and areas in process of conversion). According to Council Regulation (EC) No 834/2007<sup>(24)</sup>, organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.



## Livestock density index

Between 2003 and 2007, the number of livestock units (LSU) per hectare of utilised agricultural area (UAA) showed a decrease of 4.9 % (-1.2 % per year)



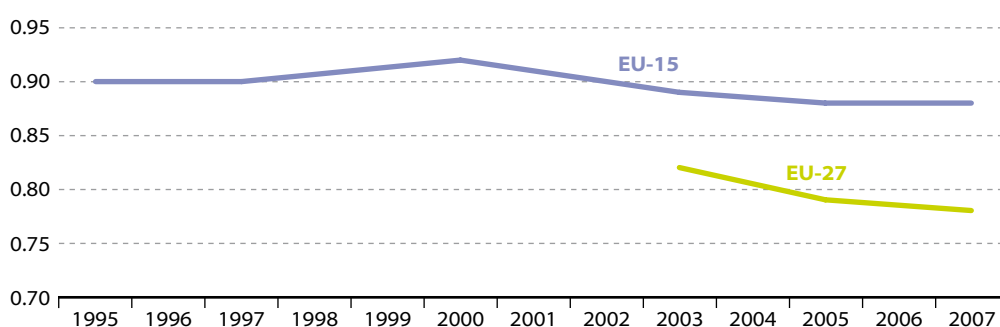
Since 2003, in the EU-27, the number of livestock units (LSU) per hectare UAA showed an average annual decrease of 1.2 %, reaching 0.78 LSU in 2007. The EU-15 figures decreased from 0.92 to 0.88 between 2000 and 2007, representing a decline of 0.6 % per year on average. Thus, the pre-2000 increase of 0.4 % per year between 1995 and 2000 could be reversed.

The EU-27 aggregate masks large differences across Member States, with levels ranging from 0.3 LSU in Latvia to 4.8 LSU in Malta. Important regional differences also exist, in particular in large countries, which can be affected by both abandoned areas and hot spots. Moreover, if it is recognised that many of the low-input regions are dominated by grazing livestock farms (either cattle or sheep). Trends by farm type may reveal unsustainable patterns, affecting high nature value farmland negatively, which the current indicator cannot highlight due to data limitations.

### Analysis

*The number of livestock units per hectare decreased in the EU-15 after a peak in 2000*

*Large differences between Members States and regions*



**Figure 4.17:**  
Livestock density index  
(livestock units per hectare)

Source: Eurostat  
(tsdpc450)

The EU Sustainable Development Strategy calls for ‘further efforts through the new programmes for rural development and the new legislative frameworks for organic farming and animal welfare’. This indicator is used as a ‘proxy’ of agricultural intensification. Intensification is a process that has characterised European agriculture for several decades. While leading to increased yields and often bringing about a more efficient utilisation of inputs, it can nevertheless result in negative externalities to the environment if not managed appropriately. Intensive livestock rearing, especially in pig and poultry production, is a main source of farmyard manure and slurry, key components of nutrient surpluses when occurring, with associated environmental impacts on aquatic systems.

### Indicator relevance

The livestock density index provides the number of livestock units (LSU) per hectare of utilised agricultural area (UAA). The LSU is a reference unit which facilitates the aggregation of livestock from various species and ages. The ‘Eurofarm LSU coefficients’, which are the basis

### Definition



of this indicator, are established by convention, although originally they were related to the animals' feed requirements, the reference being a dairy cow with an annual yield of 3 000 kg milk, without additional concentrated feeding stuffs. In the interpretation of the livestock density index, the limits of this theoretical unit are to be taken into account. The kinds of livestock aggregated in the LSU total, for the purpose of this indicator, are: equidae, cattle, sheep, goats, pigs, poultry and rabbits.



## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Resource productivity

Resource productivity is calculated by dividing GDP (deflated) by domestic material consumption (DMC).

### GDP (deflated)

The deflated GDP figures are based on the chain-linked methodology with reference year 2000.

When flows and stocks are valued at the price level in the accounting period they are said to be valued at *current prices*. Valuation at *constant prices* means valuing flows and stocks at the price of a previous period. The purpose of the valuation at constant prices is to assess the dynamics of economic development irrespective of price movements. This is achieved by decomposing changes of values over time into changes in prices and changes in volume. Price, value and volume are related by the equation:

$$\text{Value} = \text{Volume} \times \text{Price}$$

Flows and stocks at constant prices are hence said to be in volume terms. To improve the meaningfulness of volume data in view of rapidly changing price structures, Decision 98/715/EC lays down that the base year must be the previous year so that the base year is moving ahead with the observation period. A time-series of volumes is obtained by multiplying successive growth rates at previous year's prices starting from an arbitrary reference year's level. Due to its construction, this is called a chain-linked series. Unlike the choice for a fixed base year, the choice of reference year in chain-linking does not have any effect on growth rates.

### Domestic material consumption

The term 'consumption' as used in DMC denotes 'apparent consumption' and not 'final consumption'. DMC does not include upstream hidden flows related to imports and exports of raw materials and products.

Direct (used) material inputs are defined as all solid, liquid and gaseous materials that enter the economy for further use in production and consumption processes. Water and air consumption are, apart from the water content of materials, not included. The two main categories are raw materials domestically extracted and imports. The sum of these two categories constitutes the direct material input (DMI). Deducting exports from DMI results in the domestic material consumption.

Material inputs of domestic origin are further classified into three main material groups:

- fossil fuels: hard coal, lignite, crude oil, natural gas, other;
- minerals (construction materials, other industrial minerals, metal ores);

- biomass (from agriculture reported by harvest statistics, from agriculture as a by-product of harvest, from grazing of agricultural animals, from forestry, from fishing, from hunting, from other activities).

### Municipal waste and recycled and composted municipal waste

The bulk of this waste stream is from households, though 'similar' wastes from sources such as commerce, offices and public institutions are included. Estimates are made for areas not covered by a municipal waste scheme.

The interpretation of differences between countries is difficult as it combines differences in organisation of the municipal waste collection system and differences in behaviour.

Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes.

Composting is normally associated to recycling. In the context of this publication, it is presented as a separate category which covers the treatment of biodegradable matter.

At the EU-level the most important reason why the amount of municipal waste generated differs from the total amount treated is the waste generated in areas not covered by the collection system. Other reasons are import and export of waste, time lags and change in humidity.

### Atmospheric emissions

Weighting factors are used to aggregate the emissions of acidifying substances and present a single figure for this in acid equivalents.

The emissions of ozone precursors are aggregated using their ozone forming potential and can be expressed in volatile organic compounds without methane (NMVOC) equivalents.

The emissions of particulate precursors are calculated as the sum of primary (direct emissions) and secondary (formation by reactions in the atmosphere) aerosols. The emissions are aggregated into PM10 equivalents.

### Number of households

The data are derived from the European Labour Force Survey (LFS, see the socioeconomic development chapter), a quarterly household sample survey carried out in the Member States of the European Union, candidate countries and EFTA countries. The LFS provides population estimates for the main labour market characteristics, as well as important socio-demographic characteristics, such as sex, age, education, households and regions of residence.

The survey's target populations are all persons in private households aged 15 years or older.



### Household expenditure

Consumption expenditure data are collected in the context of the household budget surveys. There is no legal basis, hence each country has its own targets, methodology and survey programming, and data are not perfectly harmonised.

The categories used in this indicator correspond to the following COICOP (Classification of individual consumption by purpose) headings:

Housing and utilities	CP04 Housing, water, electricity, gas and other fuels
Food and drink	CP01 Food and non-alcoholic beverages
Clothing and footwear	CP03 Clothing and footwear
Transport	CP07 Transport
Entertainment	CP09 Recreation and culture; CP11 Restaurants and hotels
Other goods and services	CP02 Alcoholic beverages, tobacco and narcotics; CP05 Furnishings, household equipment and routine maintenance of the house; CP06 Health; CP08 Communications; CP10 Education; CP12 Miscellaneous goods and services

### Final energy consumption and electricity consumption of households

Final energy consumption is the sum of the energy consumed by the following final users:

- Industry
- Transport
- Households, services, agriculture and others.

It should be noted that final energy consumption includes electricity delivered to the final consumer, but does not include the energy consumed in generating the electricity. For this reason, final energy consumption is always less than gross inland energy consumption unless no electricity is generated within a country.

Final electricity consumption covers electricity supplied to the final consumer's door for all energy uses, it does not include own use by electricity producers or transmission and distribution losses. It is calculated as the sum of final electricity consumption from all sectors.

The electricity consumption of households represents the total quantity of electricity consumed by all households. Household consumption covers all uses of electricity for space and water heating and all electrical appliances.

### Motorisation rate

The stock of road vehicles is the number of road vehicles registered at a given date in a country and licensed to use roads open to public traffic. This includes road vehicles exempted from annual taxes or licence fees; it also includes

imported second-hand vehicles and other road vehicles according to national practices. The statistics should exclude military vehicles.

Surveys for passenger cars are not harmonised at the EU level. There are still some problems of definitions applied differently, mainly on the distinction between a lorry and a passenger car (i.e. vans, pick-ups, etc.). Therefore some caution is advised in comparing across countries.

### Environmental management systems

The data are provided by the European Commission EMAS helpdesk. They are a compilation of the national EMAS registers held by the EMAS competent national bodies.

The scheme has been available for participation by companies since 1995 and was originally restricted to sites operating industrial activities. Corporate registrations have been possible since April 2001, thus allowing organisations that had registered several sites to gather all these under a single registration number. In the 12 most recent Member States, registration according to EMAS started on 1 May 2004. Before, only a quasi-registered status was given to organisations due to the lack of government institutions.

### Eco-labels

The data are provided by the European Commission eco-label helpdesk, managed by the Directorate-General for the Environment. The Community eco-label is administered by the European Eco-labelling Board (EUEB) and receives the support of the European Commission, all EU Member States and the European Economic Area (EEA) except Liechtenstein.

The scheme has been in operation since 1993 and currently encompasses 26 product groups (see eco-label catalogue at [www.eco-label.com](http://www.eco-label.com)).

### Organic farming

The data are derived from the Farm Structure Survey, which collects data on organic farming at regular intervals and at regional level since the 2000 survey.

The indicator shows the evolution in the share of the organic farming area (where possible divided into fully converted and in-conversion areas) based on the results from the Directorate-General for Agriculture and Rural Development organic farming questionnaire in the total utilised agricultural area (UAA) in the Member States.

### Livestock density index

The livestock density index provides the number of livestock units per hectare of utilised agricultural area. It is based on data from the Eurofarm database. Livestock numbers are converted into livestock units using coefficients.

The livestock unit is theoretical, and its limits should be taken into account in the interpretation of the index. Moreover, the 'intensity' of a livestock farm is the result of a whole set of features, including the input use (fertilisers, concentrate feed, etc.), livestock patterns (the type of animal reared), cropping patterns (the composition of the forage system, pastures or maize), stocking density, and management practices (waste, use of manure, etc.) which are only partially encompassed by the indicator.



## Chapter notes

- (1) European Environment Agency, *Europe's Environment – The Fourth Assessment*, Luxembourg, Office for Official Publications of the European Union, 2007, p. 266ff.
- (2) United Nations, *Plan of Implementation of the World Summit on Sustainable Development*, Johannesburg, 2002.
- (3) European Council, *Brussels European Council, 20 and 21 March 2003, Presidency conclusions*, 2003, 8410/03.
- (4) European Council, *Review of the EU Sustainable Development Strategy (EU SDS) - Renewed Strategy*, 2006, 10117/06.
- (5) Commission communication, *Sustainable consumption and production and sustainable industrial policy action plan*, COM(2008) 397.
- (6) European Council, *Sustainable consumption and production and sustainable industrial policy action plan – Council conclusions*, 2008, 16914/08.
- (7) United Nations Environment Programme International Panel for Sustainable Resource Management, or Resource Panel: <http://www.unep.fr/scp/rpanel/>
- (8) SWITCH-Asia Network Facility: <http://www.switch-asia.eu/>
- (9) Commission communication, *Action plan for energy efficiency: Realising the potential*, COM(2006) 545.
- (10) Commission communication, *Taking sustainable use of resources forward: A thematic strategy on the prevention and recycling of waste*, COM(2005) 666.
- (11) European Council, *Review of the EU Sustainable Development Strategy (EU SDS) - Renewed Strategy*, op. cit., p. 3): ‘... promote sustainable consumption and production to break the link between economic growth and environmental degradation.’
- (12) Decoupling can be either absolute or relative. Absolute decoupling occurs when the relevant environmental pressure is stable or decreasing while the economic driving force is growing. Decoupling is relative when the growth rate of the environmentally relevant variable is positive, but less than the growth rate of the economic variable.
- (13) Directive 2006/12/EC on waste.
- (14) Directive 1999/31/EC on the landfill of waste.
- (15) Commission communication, *Thematic Strategy on air pollution*, COM(2005) 446.
- (16) Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants, as amended.
- (17) EU Labour Force Survey (2008), cited in *Living conditions in Europe, Data 2003-2006*.
- (18) European Environment Agency, *Europe's Environment – The Fourth Assessment*, op. cit., p. 272f.
- (19) Commission communication, *On the sustainable consumption and production and sustainable industrial policy action plan*, COM(2008) 397.
- (20) Facts and figures on the Eco-Label, DG Environment.
- (21) Commission Staff Working Document, *accompanying the proposal for a regulation of the European Parliament and of the Council on a Community Ecolabel scheme - Impact assessment*, SEC(2008) 2118.
- (22) Flash Eurobarometer 256 – April 2009.
- (23) Regulation (EC) No 1980/2000 on a revised Community eco-label award scheme.
- (24) Council Regulation (EC) No 834/2007 on organic production and labelling of organic products and repealing Council Regulation (EEC) No 2092/91.







# Conservation and management of natural resources







# 5

*'To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services'*

## Overview of main changes

Whilst there have been positive developments in the designation of protected areas and in water quality, the abundance and diversity of common birds, especially farmland birds, is lower than in the past, marine fish stocks are threatened, human activity continues to encroach on areas of semi-natural land, and little improvement has been seen in forest health.

**Table 5.1: Evaluation of changes in the natural resources theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
 Abundance of common birds*	Biodiversity	
	 Protected areas***	: Deadwood on forest land
	Freshwater resources	
	: Water abstraction	 Water quality in rivers****
 Conservation of fish stocks**	Marine ecosystems	
		: Fishing capacity
	Land use	
	 Change in land cover*****	 Forest trees damaged by defoliation

\* EU aggregate based on 19 Member States


\*\* In the North-East Atlantic


\*\*\* EU-15, evaluated from 2003


\*\*\*\* EU aggregate based on 18 Member States


\*\*\*\*\* EU aggregate based on 23 Member States, evaluated between 1990 and 2000

### LEGEND:

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



### Headline indicator

*Biodiversity still under pressure as examples for farmland birds and fish show*

The abundance and diversity of common birds has declined since 1990. While the index for all common birds has been rather stable since 2000, the farmland bird index has continued to decline albeit less steeply than over the previous decade. However, there was a further drop in 2006.

Total fish catches taken from stocks outside their safe biological limits sharply increased up to 21 % in 2006. Currently, fish catches in all categories by far exceed a sustainable degree of exploitation.

### Biodiversity

*Protected areas are moving towards sufficiency*

In 2007 areas designated for nature conservation in the EU-15 reached 96 % of that considered to provide sufficient habitats to safeguard biodiversity, as the result of a steady growth over the previous years. Although there are differences in the level of implementation in those Member States that have most recently joined the EU, in 2008, the median value of all 27 Member States was 91 %.

The amount of deadwood in forests, which provides an important habitat and source of food for a wide range of species, improved slightly between 2000 and 2005. However, the overall amounts remain low.

### Freshwater resources

*Freshwater resources are in good condition and have been used in a sustainable way*

In those countries for which data are available, water abstraction remains at a sustainable level, most countries having reduced their abstraction rates.

A decrease in the biochemical oxygen demand (BOD) in surface waters reflects improvements in the water quality of rivers. The average BOD value indicates that, on average, rivers are only moderately polluted and could reach a relatively clean state if the trend continues.

### Marine ecosystems

*Although the fishing fleet is decreasing, fishing capacity has not decreased*

The EU-15 fishing fleet, as measured by the total engine power of vessels, has been continuously reduced, with the aim of matching fishing capacity with available stocks. However, at the same time, technology has improved so that overall fishing capacity has not fallen.

### Land use

*Areas of natural land are being continuously consumed*

There has been a continuous consumption of natural areas for different land uses. The main increases have been to the urban fabric as well as industrial, commercial and transport units. While the latter is the most dynamic sector, showing the highest relative increase, urban fabric poses the main pressure in absolute terms.

*No significant improvement in prevention of forest degradation*

Defoliation in the EU-27 remained at a 'warning stage' from 1993 to 2006. Despite recent improvement, defoliation showed an increase from 2000 to 2006. Therefore, the aim to improve the prevention of forest degradation as stated in the United Nations Global Objectives on Forests, to which the Sustainable Development Strategy (EU SDS) refers, has not been reached.

## Background

Human development is dependent on natural resources for the provision of food, water and fuel, and the regulation of the environment through services such as carbon storage and water purification. In order to meet the demands of current and future generations, the sustainable use of natural resources is crucial.

Although the term 'natural resources' includes basic raw materials such as metals, minerals and fossil fuels, this chapter is concerned with the integrity of the biosphere and the life-supporting services it provides. Issues related to the sustainable and efficient use of non-renewable resources and the associated environmental impacts are considered separately in the chapter on sustainable consumption and production.

Pressure on the natural environment has already led to losses in virtually all types of ecosystems and in the services they offer to human society as underlined by the Millennium Ecosystem Assessment in 2005 <sup>(1)</sup>.

The economic dimension of this loss is being increasingly acknowledged, for example in the EU Thematic Strategy on the sustainable use of natural resources <sup>(2)</sup> and, more recently, the 'Potsdam Initiative – Biological Diversity 2010' agreed by environment ministers of the G8 countries and the five major newly industrialising countries in March 2007. The initiative is being followed up with a global study on the economics of ecosystems and biodiversity <sup>(3)</sup>. It has been estimated that the cost of not halting biodiversity will lead to a loss of ecosystem services equivalent to around 7 % of GDP by 2050 <sup>(4)</sup>.

The EU has responded to this challenge by building a comprehensive legislative framework for environmental protection over the last 30 years. The Birds Directive <sup>(5)</sup> and the Habitats Directive <sup>(6)</sup> are the key pillars of Natura 2000, a network of protected areas covering about 17 % <sup>(7)</sup> of the EU land area. In recent years, this legislation has been integrated into a broader approach based on the concept of sustainable development, including the Environmental Impact Assessment Directive <sup>(8)</sup> and the Strategic Environmental Assessment Directive <sup>(9)</sup> which ensure that the environmental consequences of projects, plans and programmes are identified and assessed. In addition, the EU SDS highlights the need to improve the management of natural resources and to avoid overexploitation within the EU and globally, thereby recognising the value of ecosystem services. Finally, one of the four priority issues in the Sixth Environment Action Programme <sup>(10)</sup>, which establishes the framework for environment policy in the EU for the period 2002 to 2012, is natural resources.

The continued pressure on biodiversity was addressed in the Commission communication on halting biodiversity loss by 2010 <sup>(11)</sup>. However, the mid-term assessment of its implementation carried out in 2008 concluded that the EU is unlikely to meet its 2010 target for halting the loss of biodiversity and that intensive effort will be required over the following two years. EU policies and legislation already provide a strong basis to address the biodiversity challenge as long as they are effectively implemented. Additionally, natural resources should be taken into account in cross-cutting legislation as was done for example in the Marine Strategy Framework Directive <sup>(12)</sup>, the EU Forest Action Plan <sup>(13)</sup>, the Water Framework Directive <sup>(14)</sup>, the Environmental Liability Directive <sup>(15)</sup> and also the Common Agricultural Policy reforms adopted in 2003 <sup>(16)</sup> which aim to reduce the impacts of agriculture on natural resources by decoupling direct subsidies from agricultural production.

*Although essential for human well-being, natural resources are under continuous pressure*

*The degradation of natural resources has economic consequences*

*The EU has recognised the need for the sustainable use of natural resources over the past 30 years*

*It is unlikely that the loss of biodiversity can be halted by 2010*

### Box 5.1: Objectives related to 'Conservation and management of natural resources' in the EU Sustainable Development Strategy

Overall objective:

To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

Operational objectives and targets

- Improving resource efficiency to reduce the overall use of non renewable natural resources and the related environmental impacts of raw material use [considered in the chapter on sustainable consumption and production], thereby using renewable natural resources at a rate that does not exceed their regeneration capacity.
- Gaining and maintaining a competitive advantage by improving resource efficiency, *inter alia*, through the promotion of eco-efficient innovations [considered in the chapter on socio-economic development].
- Improving management and avoiding overexploitation of renewable natural resources such as fisheries, biodiversity, water, air, soil and atmosphere, restoring degraded marine ecosystems by 2015 in line with the Johannesburg Plan (2002) including achievement of the Maximum Yield in Fisheries by 2015.
- Halting the loss of biodiversity and contributing to a significant reduction in the worldwide rate of biodiversity loss by 2010.
- Contributing effectively to achieving the four United Nations global objectives on forests by 2015.
- Avoiding the generation of waste and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling [considered in the chapter on sustainable consumption and production].

## Potential linkages

### Linkages within natural resources

The conversion and fragmentation of natural habitats is one of the key drivers for biodiversity loss. Land use changes, such as deforestation, conversion of pasture into arable land and altering crop-rotations, not only affect vegetation, but also the quality of the soil and soil animal community composition. Furthermore, these land use changes negatively affect the ecosystem functions of habitats.

Water supply has direct and indirect effects on biodiversity. The quality and quantity of freshwater resources are directly related to the status of freshwater ecosystems and their species. Groundwater can also affect biodiversity when, for instance, lowered water tables resulting from over-abstraction have a harmful effect on vegetation. For example, although forest defoliation is primarily caused by air pollution, it is also linked to water availability since water stress contributes to defoliation. Decreasing biochemical oxygen demand in rivers indicates increasing quality of freshwater resources, which has positive effects on organisms in aquatic habitats.

### Linkages with the economic dimension

The exploitation and consumption of natural resources have been an important basis for economic growth and the increasing level of human welfare in Europe. Nevertheless, diminishing quantities and quality of resources can result in welfare losses. Often lost ecosystem services have to be substituted by technical applications. Prominent examples are the cost of transporting drinking water to overcome water shortages generated by over-abstraction, and the increasing number of groundwater aquifers that do not meet EU standards for drinking water and require additional purification.

The continued high fish catches which exceed sustainable biological limits have caused a significant decrease in fish stocks and overall fish landings, resulting in declining employment within the fishery sector.

The sealing of land from the construction of roads and buildings prevents rainfall from entering the soil. This, along with increasing severity of rain due to climate change and the loss

of retention areas due to the construction of new settlements, often enough built on vulnerable land, triggers the risk of flooding, leading to rising damage costs and costs for new flood prevention infrastructure.

The social dimensions of biomass production were addressed by sustainability criteria in the Directive on the promotion of the use of energy from renewable sources<sup>(17)</sup>. The social criteria aim to prevent, amongst other things, unfair practices such as land grabbing. Land availability and land use change are recognised as having a significant social dimension, related to issues surrounding tenure rights, access to land and land displacements.

*Linkages with social dimension and health*

In response to diminishing fish stocks worldwide generated by overexploitation and the increasing problem of deforestation, several certification schemes have been established for promoting a sustainable use of fish and forest products. The role of certification has also become important for EU bioenergy policy.

*Linkages with sustainable consumption*

Research indicates that climate change will cause major changes in plant and animal communities in the future. Changes in temperature and rainfall patterns will cause changes in ecosystem conditions, which will result in shifts or a complete loss of suitable habitats for certain species. There is already evidence of a shift in the distribution of some bird populations<sup>(18)</sup>. Furthermore, changes in climatic conditions make ecosystems more vulnerable to invasive alien species. Mountain ecosystems, coastal wetlands and ecosystems in the Mediterranean region are the most vulnerable. Finally, there is an increasing acidification of the oceans through absorption of CO<sub>2</sub>.

*Linkages with climate change and energy*

On a more positive note, the total biomass of forests in the EU, which serve as CO<sub>2</sub> sinks, has increased. This increase in stocks results in higher amounts of sequestered CO<sub>2</sub>, helping to reduce greenhouse gas concentrations.

The use of biomass for the production of energy threatens biodiversity and ecosystem functions. The rising demand for biomass for energy production has led to a significant increase in cultivation of high input crops such as corn and rape. Consequently, fallow land, which is an important habitat for many farmland species, has been increasingly used to grow energy crops. Biomass extraction also occurs in other habitats such as forests. Using wood for heating and in combustion plants for electricity generation can help to increase the share of renewable energy production. However, together with the increasing demand for biofuels from cellulose, it increases the pressure on forests.

The conservation of biodiversity and natural resources goes beyond the boundaries of the EU. Migratory birds and fish stocks in international waters are good examples. The need for a globally coordinated protection of biodiversity is manifested in the Ramsar Convention on Wetlands and the Berne Convention on the Conservation of European Wildlife and Natural Habitats, as well as in the UN Convention on Biological Diversity, which has a strong focus on access and benefit sharing. Additional approaches include certification schemes to promote sustainable patterns of natural resources production. These should incorporate the issue of indirect land use change as all decisions on land use within the EU have effects on land use in other regions of the world.

*Linkages with global partnership*

#### Further reading

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European Environment Agency, *Progress towards the European 2010 biodiversity target*, EEA Report No 4/2009, Publications Office of the European Union, Luxembourg, 2009

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## Abundance of common birds

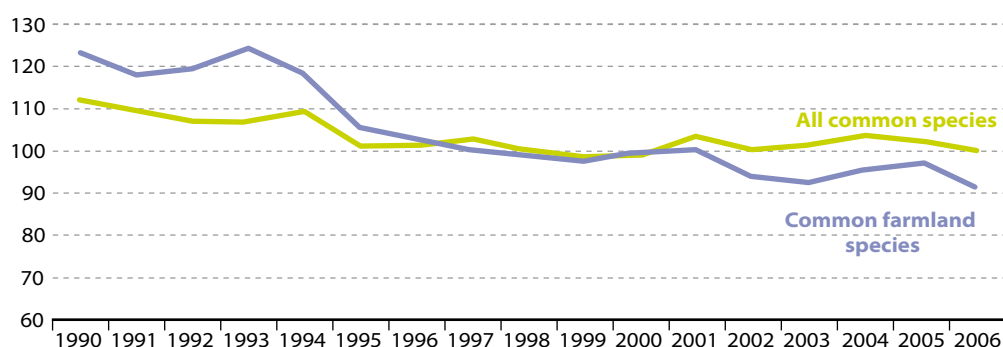
The EU index for all common birds has been relatively stable since 2000, but at a level substantially lower than in 1990. Farmland birds are, however, still in decline, albeit at a lower rate than over the previous decade



The common bird index combines information on the diversity and abundance of common bird species. Apart from human impacts on habitats, bird populations fluctuate from year to year due to complex interactions with other species and environmental factors such as food supply and climatic conditions. Consequently, trends can only be derived from observations over a long period of time rather than from annual changes. Whilst the index for all common birds has shown only mild fluctuations since 2000, the population for farmland birds has shown an average decline of about 1.2 percentage points per year between 2000 and 2006. These trends are in contrast to the steeper declines which occurred between 1990 and 2000, when the farmland bird and common bird indices fell at average annual rates of 2.3 and 1.2 percentage points respectively. Evidence<sup>(19)</sup> suggests that intensive agricultural practices, such as the removal of grasslands and hedgerows, and pesticide and fertilizer use are a significant contributor to the decline in farmland birds.

### Analysis

*Despite a stabilisation in common bird populations, farmland birds continue to be in decline*



**Figure 5.1:**  
Common bird index, EU  
(index 2000 = 100)

Source: EBCC/ RSPB/  
BirdLife/ Statistics  
Netherlands/ Eurostat  
(tsdnr100)

NB: EU aggregates are estimates based on 19 Member States: BE, BG, CZ, DK, DE, EE, IE, ES, FR, IT, LV, HU, NL, AT, PL, PT, FI, SE and UK.

Birds are considered good proxies for biodiversity and the integrity of ecosystems. They reflect changes in ecosystems rather rapidly since they tend to be at, or close to, the top of the food chain, have large ranges and are able to migrate. Although not encompassing the whole diversity of birds across the EU, this indicator provides a measure of the state of a wide range of common species.

The Sustainable Development Strategy reiterates the aim of halting the loss of biodiversity by 2010. It calls for Member States to pay particular attention to the need for improving species protection and management policies. However, the mid-term assessment of implementing the EU Biodiversity Action Plan<sup>(20)</sup> considers that 'it is highly unlikely — on the basis of current efforts — that the overall goal of halting biodiversity loss in the EU by 2010 will be achieved'. The report states that 40 % of European bird species have an unfavourable conservation status.

This indicator is an aggregated index integrating the population abundance and the diversity of a selection of bird species associated with specific habitats. All are common bird species excluding rare species. Two groups of bird species are presented in this indicator: farmland specialists (36 species), and 'all common birds' species (135 species). The 'all common birds' category regroups species from the 'farmland birds' group with other common bird species. An increase in the indicator means that there are more species whose populations have increased than species with decreasing populations.

### Indicator relevance

### Definition



## Conservation of fish stocks



Between 2000 and 2006 the proportion of total fish catches taken from stocks outside safe biological limits more than doubled, rising from 10 % to 21 %

### Analysis

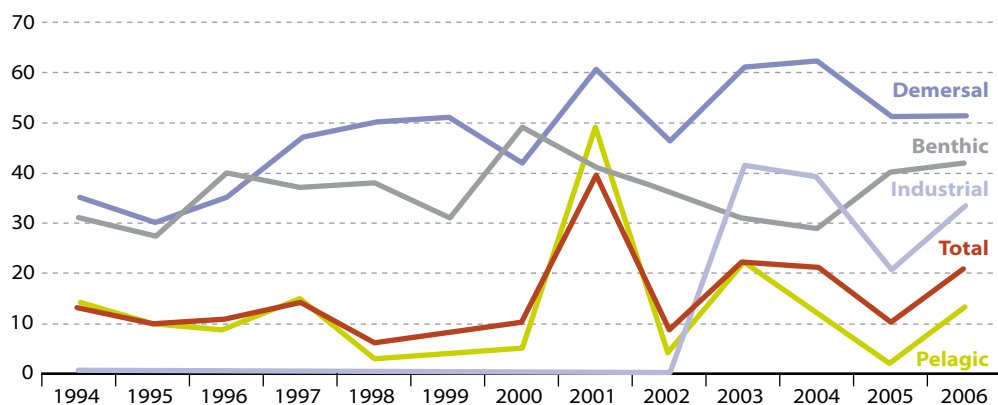
#### Fish stocks continue to be threatened by overfishing

Despite temporary improvements in 2002 and 2005, 21 % of total fish catches in 2006 were from stocks outside safe biological limits, and catches of all categories of fish considerably exceeded sustainable levels of exploitation

Prior to 2000, the proportion of total catch from stocks outside safe biological limits in EU-managed waters of the North-East Atlantic fluctuated at around 10 %. Large deviations from this level occurred in 2001 and 2003, driven by changes in the status of certain species whose catches were very high and, therefore, had a strong influence in the overall figures. These species were blue whiting (pelagic – open ocean stock) in 2001 as well as mackerel (pelagic) and sandeel (industrial stock) in 2003. Total catches taken from stocks outside safe biological limits moved closer to the previous 10 % level in 2005. However, due to a sharp increase in unsustainable catches, especially of pelagic and industrial fish, and the constant high value for demersal and benthic fish (living on or close to the sea bed), total fish catches from stocks outside safe biological limits again exceeded the 20 % mark in 2006. Fish stocks remain threatened by overfishing.

**Figure 5.2:**  
Fish catches taken from stocks outside safe biological limits (%)

Source: European Commission services, ICES (tsdnr110)



NB: Refers to EU managed waters of the North-East Atlantic (North Sea, Baltic Sea, Bay of Biscay and the Iberian Peninsula), excluding the Mediterranean and Black Seas.

### Indicator relevance

Besides ecological damage to marine ecosystems, overfishing bears high economic risks for the whole fishing sector. The Green Paper on the Reform of the Common Fisheries Policy <sup>(21)</sup>, stresses that economic and social sustainability require productive fish stocks and healthy marine ecosystems: the economic and social viability of fisheries can only result from restoring the productivity of fish stocks. The operational objectives of the Sustainable Development Strategy include improving management and avoiding overexploitation of renewable natural resources, including fish.



This indicator shows the percentage of fish caught in EU-managed waters that are taken from stocks that have been assessed to be outside safe biological limits by the International Council for the Exploration of the Sea. The indicator will highlight problems when overfishing is moderate but may undervalue the problem if overfishing is severe as in that case the overall catches from overfished stocks will be low due to collapsed fish stocks.

The sea areas considered cover the North-East Atlantic (North Sea, Baltic Sea, Bay of Biscay and the Iberian Peninsula), and exclude the Mediterranean Sea and the Black Sea. The Mediterranean and Black Seas are covered by a separate organisation.

## Definition



## Protected areas



Between 2003 and 2007 the area designated for nature conservation in the EU-15 grew steadily, reaching a level of 96 % of that considered sufficient

### Analysis

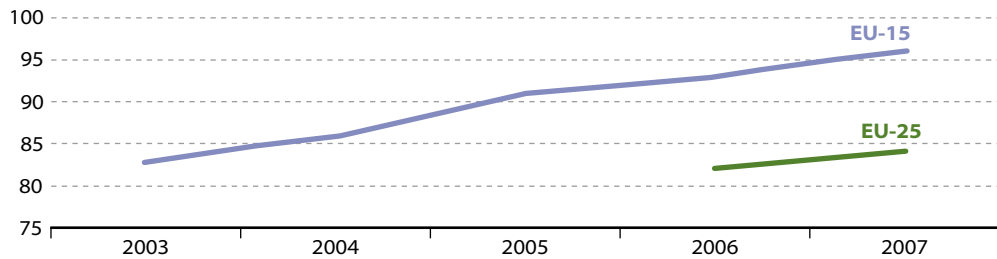
*Four Member States have already achieved 100 % sufficiency and ten others are over 90 % sufficient*

The establishment of Natura 2000 sites is an important pillar of the EU's efforts to halt the loss of biodiversity. The sufficiency of designated areas in the EU-15 rose steadily from 83 % in 2003 to 96 % in 2007. For EU-25, the sufficiency of designated areas rose from 82 % to 84 % between 2006 and 2007.

Although data for the EU as a whole are currently only available up to 2007, 2008 data are available for individual Member States. Whilst Belgium, Denmark, Italy and the Netherlands had already achieved 100 % sufficiency by 2008 and a further ten Member States were over 90 % sufficient, Cyprus and Poland remained with 25 % and 17 % respectively. The largest increases from 2003 to 2008 have been in Germany (from 27 % to 99 %) and Sweden (from 74 % to 99 %).

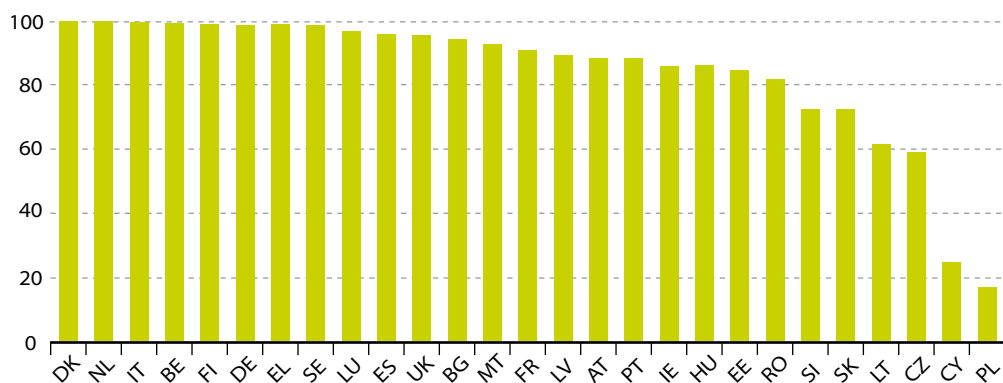
**Figure 5.3:**  
Sufficiency of sites designated under the EU Habitats Directive (%)

Source: European Commission services, Eurostat (tsdnr210)



**Figure 5.4:**  
Sufficiency of sites designated under the EU Habitats Directive, by country, EU-27, 2008 (%)

Source: European Environment Agency





The sufficiency index, so far compiled only for the Habitats Directive, indicates the degree of implementation of the Natura 2000 network.

**Indicator  
relevance**

The Sustainable Development Strategy underlines the EU's commitment to halting the loss of biodiversity by 2010. It also calls for Member States to complete the Natura 2000 network and to pay particular attention to species and habitats protection and management.

The index measures the extent to which sites of Community importance proposed by the Member States adequately cover the terrestrial species and habitats listed in Annexes I and II to the Habitats Directive.

**Definition**



## Deadwood on forest land

The available data on deadwood show that although, there have been slight improvements between 2000 and 2005, the overall amounts of deadwood are low and may not be sufficient to preserve biodiversity in forests. The indicator has not been evaluated because deadwood can also be undesirable, providing a habitat for insect pests and posing a fire risk in dry regions

### Analysis

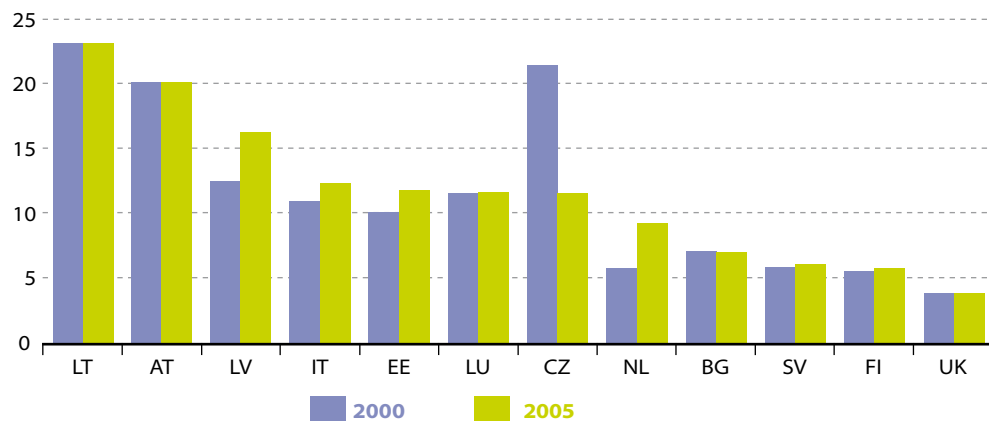
*Amounts of deadwood are generally insufficient to support forest biodiversity*

Deadwood on forest land varied between 4 and 23 m<sup>3</sup>/ha in 2005. In most countries for which data are available, deadwood on forest land either increased or remained stable between 2000 and 2005, except for the Czech Republic where deadwood decreased from about 21 to 12 m<sup>3</sup>/ha. Austria and Lithuania were the Member States with the highest levels of deadwood in 2005.

In general forests in the more easterly countries and in mountainous regions have the highest volumes of deadwood <sup>(22)</sup>.

**Figure 5.5:**  
Deadwood on forest land, by country (m<sup>3</sup>/ha)

Source: United Nations Economic Commission for Europe



### Indicator relevance

Forests are complex renewable resources which serve diverse purposes, such as timber production, water catchment, recreation and the conservation of biodiversity. This indicator monitors the potential contribution of forests to biodiversity. Deadwood provides a habitat for many bacteria, fungi, mosses and insects that constitute a source of food for other animals, particularly birds and small mammals. As nearly all forests in the EU are managed, the occurrence of deadwood depends on how a particular forest is managed. The optimum amount of deadwood needed to sustain forest biodiversity is uncertain, but estimates range from about 18 m<sup>3</sup>/ha <sup>(23)</sup> up to 38-60 m<sup>3</sup>/ha of deadwood in deciduous forests <sup>(24)</sup>. However, this figure does not apply to dryer regions, where large amounts of deadwood pose a fire risk.

### Definition

The indicator measures the volume of standing and lying deadwood on forest land [m<sup>3</sup>/ha].





## Water abstraction

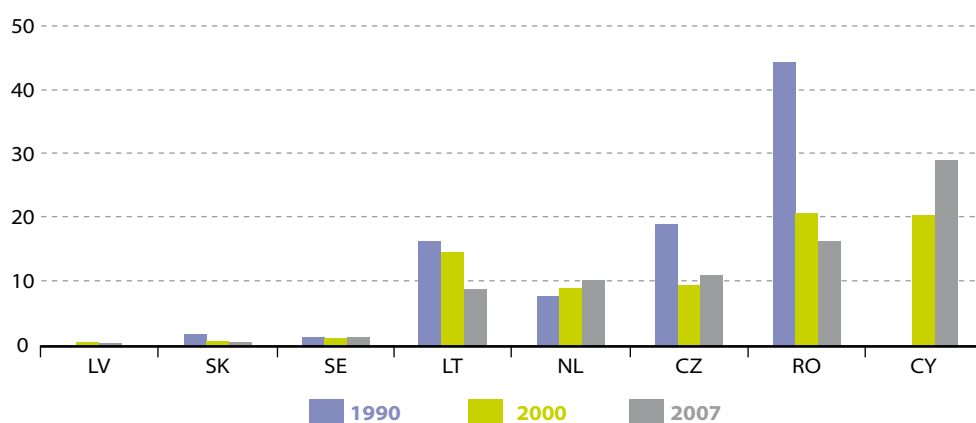
In nearly all Member States for which data are available, water abstraction remained at a sustainable level, and most countries appear to have reduced pressures on water resources by reducing their abstraction rates between 1990 and 2007

The share of total annual water abstraction from available renewable water resources gives an indication of the pressure on the long-term annual average of renewable water resources. The consumption of both surface and groundwater is driven by four main economic activities, whose relative importance varies across Member States: (i) cooling in electricity production; (ii) public water supply; (iii) the manufacturing industry; and (iv) agriculture, forestry and fishing. Overall, 44 % of the total abstracted water is for energy production, 24 % for agriculture, 21 % for public water supply and 11 % for industry. These figures vary significantly across the EU, and in southern counties agricultural water abstraction accounts for 60 % of the total <sup>(25)</sup>.

From 1990 to 2000, annual surface water abstraction either decreased or remained relatively stable in most Member States. This trend continued from 2000 to 2007, during which only Cyprus experienced a significant increase in surface water abstraction, reaching 38 % of renewable resources in 2004, which, however, levelled off to about 29 % in 2007. Romania, which at about 44 % had by far the highest level of abstraction in 1990, reduced its abstraction to 21 % in 2000 and to 16 % in 2007.

### Analysis

*Abstraction levels are generally within sustainable limits*



**Figure 5.6:** Surface water abstraction as a share of available renewable resources, by country (%)

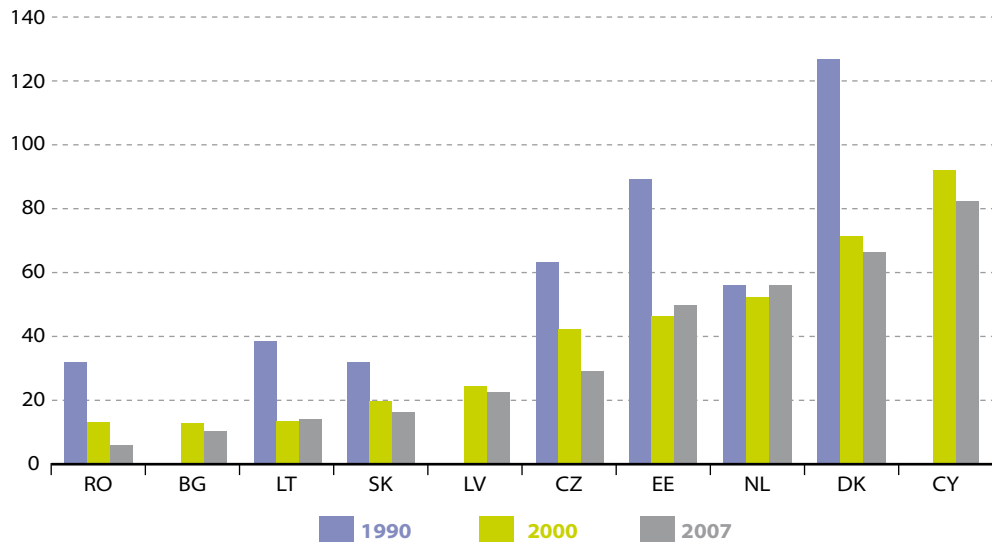
Source: Eurostat (tsdnr310)

NB: NL data from 2001 and 2006 (instead of 2000 and 2007).

Groundwater abstraction either decreased or remained relatively stable between 1990 and 2007 and reached sustainable levels in 2007 in all Member States for which data are available. Several countries showed high or, in the case of Denmark and Cyprus, unsustainable groundwater abstraction levels during the 1990s. Denmark reduced its abstraction level from about 126 % in 1990 to a sustainable abstraction rate of about 66 % in 2004. Groundwater abstraction in Cyprus peaked at 122 % in 1999, but this had come down to 82 % by 2007.

**Figure 5.7:**  
Groundwater  
abstraction as a  
share of available  
renewable  
resources, by  
country (%)

Source: Eurostat  
(tsdnr310)



NB: DK data from 2004 (instead of 2007); EE data from 2005 (instead of 2007); NL data from 2001 and 2006 (instead of 2000 and 2007)

### Indicator relevance

The indicator provides an assessment of pressure on quantities of long-term water resources. The Sustainable Development Strategy underlines the necessity of improving integrated water resources management and avoiding overexploitation. The main legal instrument for water policy in the EU is the Water Framework Directive <sup>(26)</sup>, which aims to achieve coherent and sustainable water management, both in terms of quality and quantity. In July 2007, the Commission additionally adopted a communication addressing the challenge of water scarcity and droughts in the EU <sup>(27)</sup>.

Availability of water for abstraction is strongly determined by geographical location. Geoclimatic differences influence the amount of surface water and groundwater available for use. When analysing these mean values, it is important to take into account the variations in availability of, and even more so in demand for, water in different regions of individual countries, e.g. in regions with high demand from irrigation or tourism. These variations can lead to severe water scarcities at the local level <sup>(28)</sup>.

Although groundwater and surface water are presented separately, there are evident hydrological interactions between these two types of resources. Abstraction varies annually due to weather and changes in industrial productivity. Small variations should not necessarily be interpreted as trends.

### Definition

This indicator shows total annual water abstraction as a percentage of the long-term annual average of renewable available water resources, separated into groundwater and surface water. Annual total gross abstraction from renewable groundwater is presented as a percentage of Member States' renewable groundwater resources available for abstraction, which are defined as long-term annual average groundwater available for abstraction. Annual total gross abstraction made from renewable fresh surface water is presented as a percentage of the long-term annual average of Member States' renewable surface water resources available for abstraction, which are calculated as total long-term annual average of fresh water resources (long-term annual average of external inflow plus precipitation less long-term annual average of evapotranspiration) less the long-term annual average of renewable groundwater available for abstraction.



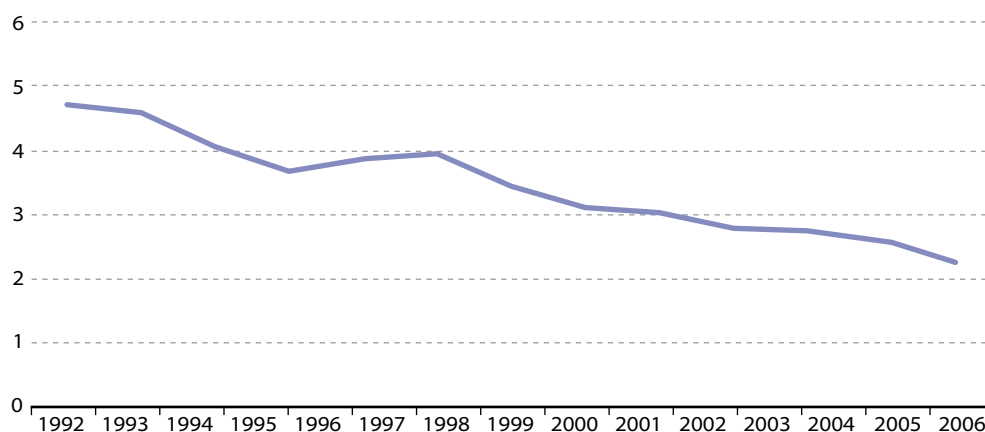
## Water quality in rivers

Between 2000 and 2006 the annual mean concentration of biochemical oxygen demand has decreased in rivers for the 18 countries considered, indicating a favourable increase in water quality



Biochemical oxygen demand (BOD) estimates the total amount of biodegradable organic matter in a system and is a commonly used indicator of water quality: the lower the BOD, the higher the water quality. There has been a favourable decrease in BOD in the 18 Member States over the entire period for which data are available, falling from a mean level of 5.0 mg/l in 1992, to 3.2 mg/l in 2000, and continuing to 2.3 mg/l in 2006. This trend is indicative of the improvement in waste water treatment following the 1991 Urban Wastewater Directive <sup>(29)</sup> and possibly to decreasing emissions from agriculture.

The trends in BOD are mirrored by other, more specific, measurements of water quality, such as ammonium, nitrate and phosphate.



### Analysis

*Water quality in rivers has improved*

**Figure 5.8:**  
Biochemical oxygen demand in rivers, EU (mg/l)

Source: European Environment Agency, Eurostat (tsdnr 330)

NB: EU aggregate based on between 1 096 and 1 716 measuring stations in 18 Member States.

Surface water quality is important for integrated water resources management. High BOD is usually a result of organic pollution, caused by discharges from waste water treatment plants, industrial effluents, run-off and agricultural sources. High BOD indicates microbiological contamination, which affects the quality of drinking and bathing water. The cleanest rivers have a five-day BOD of less than 1 mg/l. Moderately polluted rivers' values range from 2 to 8 mg/l.

### Indicator relevance

This indicator is defined as the mean annual five-day BOD (BOD5) in rivers, weighted by the number of measuring stations. BOD5 is a measure of the amount of oxygen required by aerobic microorganisms to decompose organic substances in a water sample over a period of five days in the dark at 20°C. It is a measure of the quality of water: the lower the value of BOD5, the higher the water quality.

### Definition



## Fishing capacity

Despite the continuous decrease in fishing fleets, as measured by the total engine power of fishing vessels, progress in fishing efficiency means that fishing capacity is still too high for the available fish stocks. However, since no direct measure of fishing capacity is available, this indicator cannot be evaluated

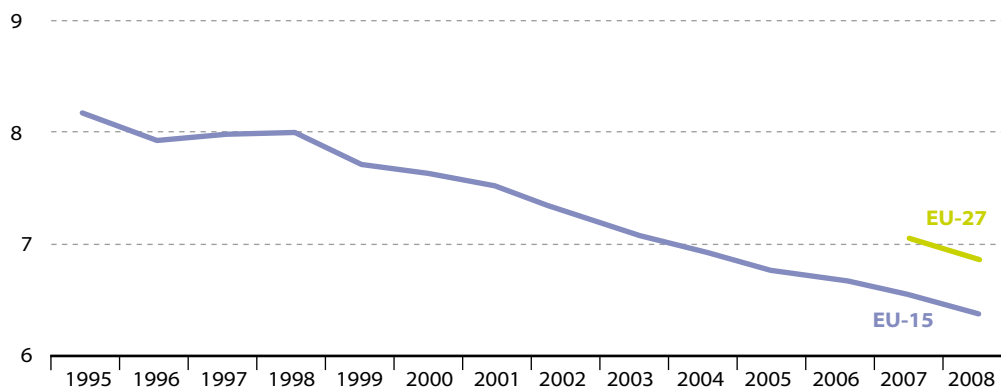
### Analysis

*Whilst the size of fishing fleets has declined, fishing capacity is still too high to sustain stocks*

The EU-15 fishing fleet, as measured by the total engine power of fishing vessels, decreased by 1.4 % on average per year from 1995 to 2000. From 2000 to 2008 the average annual rate of decrease reached 2.4 %. The trend towards reducing fishing fleets can be observed in all Member States and the limited data available for the EU-27 fishing fleet show a similar but somewhat steeper trend. According to the Green Paper on the Reform of the Common Fisheries Policy <sup>(30)</sup>, these decreases may well have been offset by technological progress which is estimated to increase fishing efficiency by approximately 2-3 % per year <sup>(31)</sup>. The imbalance between the fleet and available fish stocks has therefore not been redressed, resulting in reduced landings and a heavier reliance of the EU market on imports.

**Figure 5.9: Fishing fleet, total engine power (Mio kilowatts)**

Source: Eurostat (tsdnr420)



### Indicator relevance

According to the Green Paper on the Reform of the Common Fisheries Policy, the imbalance between the size of the fleet and available fish stocks is at the root of the problems related to low economic performance, weak enforcement and overexploited resources. The Sustainable Development Strategy specifically stresses the need to address the overall fishing pressure by adapting the EU fishing effort to the level of available resources.

### Definition

The EU fishing effort is measured here as the total engine power of the fishing fleet. The EU-data are derived from the Community Fishing Fleet Register.



## Change in land cover

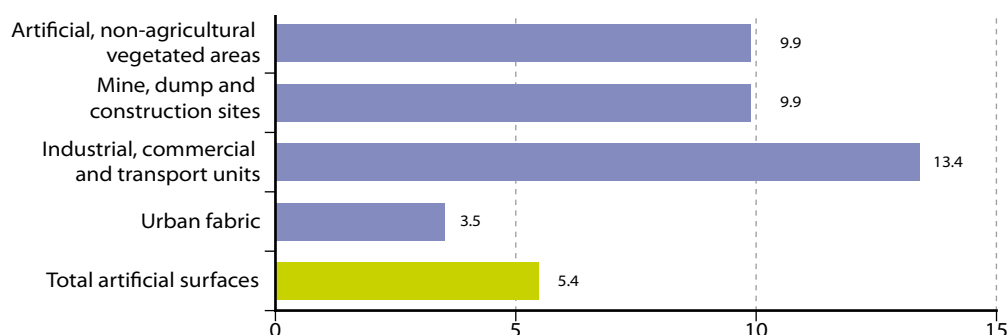
During the period from 1990 to 2000 artificial surfaces as a whole grew by approximately 5.4 %. The main increases were in the urban fabric and industrial, commercial and transport units. While the latter is growing the fastest, urban fabric poses the main pressure in terms of hectares of sealed surface



Built-up land is continuously encroaching on farmland and semi-natural land. The category 'industrial, commercial and transport units' (comprising industrial sites, airports, ports and roads) experienced the highest rate of growth. It is particularly significant that within this category, road and rail networks showed an especially high growth rate, as the fragmentation of habitats associated with such extensive linear structures is a major pressure on biodiversity, limiting the range available to animals for breeding or finding food. Although growing more slowly, the largest change in absolute terms was due to increases in the 'urban fabric' (comprising housing estates and other urban construction).

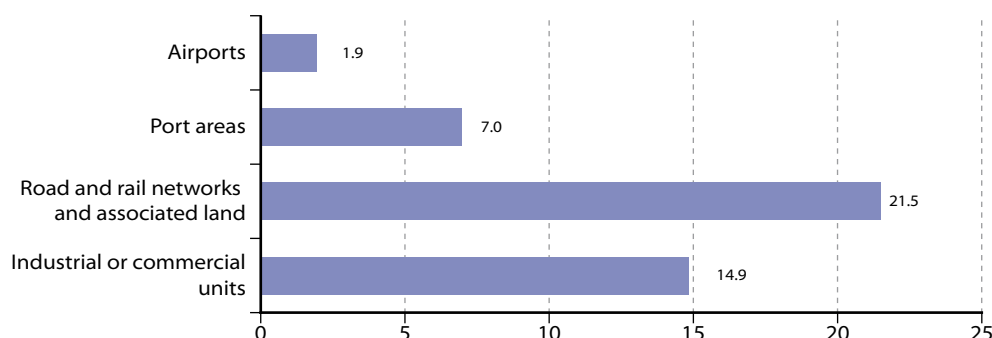
### Analysis

*Artificial surfaces are increasing at the expense of semi-natural and agricultural land*



**Figure 5.10.a:** Increase in total artificial surfaces, by category, EU, 1990-2000 (%)

Source: European Environment Agency, Eurostat



**Figure 5.10.b:** Increase within the category 'Industrial, commercial and transport units', EU, 1990-2000 (%)

Source: European Environment Agency, Eurostat

NB: EU aggregate based on the following 23 Member States: BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, IT, LV, LT, LU, HU, NL, AT, PL, PT, RO, SI, SK, UK.

**Indicator relevance**

Changes in land use and land cover are almost always irreversible and include the sealing of land and fragmentation of habitats, and are consequently an important threat to habitats and biodiversity and the ecosystem services they provide. The overall objective of the Sustainable Development Strategy for the conservation and management of natural resources is to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

**Definition**

This indicator shows the percentage change in observed land cover between the years 1990 and 2000.





## Forest trees damaged by defoliation

The share of forest trees damaged by defoliation increased moderately between 2000 and 2006. The objective of improving the prevention of forest degradation has therefore not been achieved

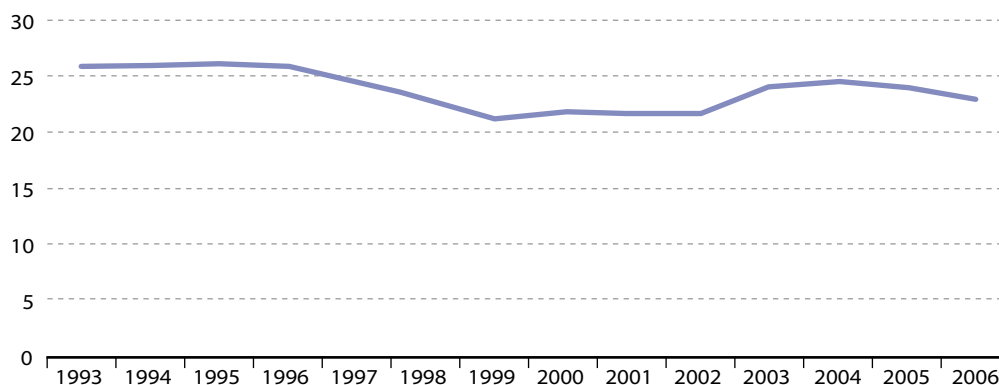


In the mid-1990s about 26 % of forest trees in the EU-27 showed damage by defoliation. By 2000 this had fallen to about 22 %, but rose again in 2002 and 2003. Although the amount of defoliation has been decreasing since 2004, in 2006 the extent of defoliation stood at 23 %, one percentage point higher than in 2000.

Although a variety of factors influence defoliation, air pollution and the extreme heat and drought in large parts of Europe during the summer of 2003 contributed to the higher defoliation in that year as well as in the following year <sup>(32)</sup>.

### Analysis

*Defoliation in the EU-27 remains at the warning stage level*

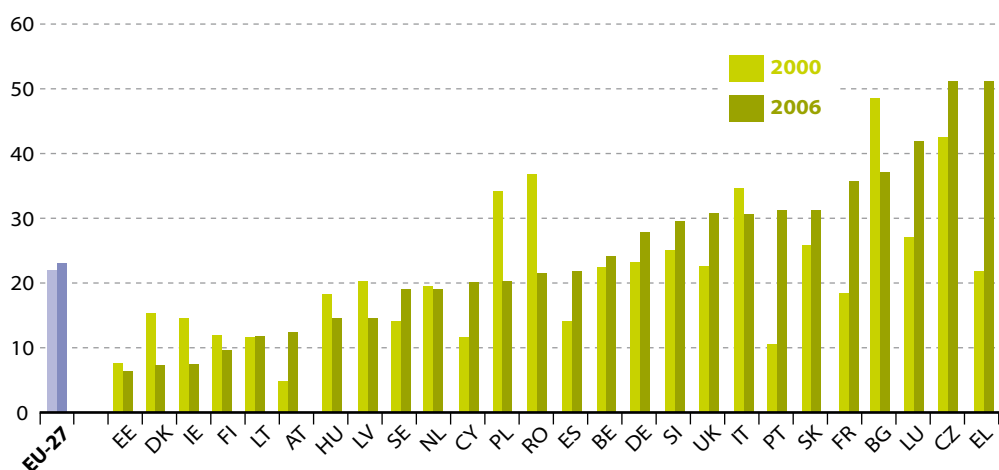


**Figure 5.11: Forest trees damaged by defoliation, EU-27 (%)**

Source: European Commission services, Joint Research Centre, Eurostat (tsdnr530)

In 2006, the high variance in values between Member States indicated no clear pattern within the EU. The highest defoliation rates were found in the Czech Republic and Luxembourg, where over 40 % of the trees assessed were damaged. The rate of defoliation was less than 10 % in Estonia, Denmark, Ireland and Finland.

*No clear pattern across Member States*



**Figure 5.12: Forest trees damaged by defoliation, by country (%)**

Source: European Commission services, Joint Research Centre, Eurostat (tsdnr530)

**Indicator relevance**

Defoliation rates serve as a general indicator of the health and vigour of forest trees, defoliation being indicative of a reduced tolerance to adverse environmental conditions. Crown condition responds rather quickly to various environmental stressors such as drought, atmospheric pollution and forest pathogens.

The renewed EU SDS calls for effective contribution to achieving the four United Nations Global Objectives on Forests <sup>(33)</sup> by 2015, which include increasing efforts to prevent forest degradation. The EU Forest Action Plan includes as one of its objectives to ‘maintain health and resilience of forest ecosystems’.

**Definition**

This indicator is defined as the percentage of trees on forest and other wooded land in the defoliation classes moderate, severe and dead. Defoliation is needle or leaf loss in the assessable crown as compared with a reference tree.



## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Abundance of common birds

The EU index is based on trend data collected by volunteer observers from 19 EU Member States through the Pan-European Common Bird Monitoring Scheme and compiled by Statistics Netherlands.

National indices are calculated by the national organisations for each species independently. The annual national indices are based on the total number of birds counted. EU indices for each species are produced by aggregating national indices using population dependent weighting factors for each country. This weighting allows for the fact that different countries hold different proportions of a species' European population. The individual species indices are then combined to create a multi-species EU indicator by averaging the indices with an equal weight using a geometric mean. Indices are averaged rather than weighted by each species' abundance in order to give each species an equal weight in the resulting indicator. The indicator is calculated for 36 common farmland birds and 135 common birds (including the farmland birds).

### Conservation of fish stocks

Figures represent the percentage of total fish catches taken from stocks which are considered to be outside safe biological limits (SBL). Catches have been estimated by the International Council for the Exploration of the Sea. They may include catches taken by third countries.

A stock is considered to be outside SBL (or overfished) when its size has fallen below sustainable levels, i.e. when its size does not guarantee replenishment by reproduction. A stock is considered to be within safe biological limits, if its spawning stock biomass (SSB) estimated at the end of the year is higher than the SSB corresponding to the precautionary approach level.

The data cover the fishing areas of the North-East Atlantic which are managed autonomously or jointly by the EU (North Sea and Baltic Sea, Bay of Biscay and the Iberian Peninsula, excluding the Mediterranean). They include catches by third countries in these areas. However, for example, stocks managed by Norway and Russia are excluded. As the data for the indicator are based on the catches by stock, no comparisons by country are possible and no EU aggregate is possible.

The following stocks and corresponding main species are considered:

- Benthic: species living on the sea bed, such as nephrops, prawns, flatfish, anglerfish;
- Demersal: species living near or at the bottom of the sea, but with the capacity for active swimming, mainly roundfish such as cod, haddock, whiting;

- Industrial: species used for the production of meal and oil, such as sprat, sandeel, Norway pout;
- Pelagic: species living in the open sea, such as herring, anchovy, sardine, horse mackerel (North Sea and southern stocks), redfish.

The classification used is intended to reflect both the biology of the species and the type of fishery performed. To some extent, this breakdown also serves the purposes of economic analysis as it brings together types of fish of comparable commercial value, although there are considerable differences within each type.

### Protected areas

The indicator calculates the sum, by bio-geographical region and per country, of the proportion of habitats and species that are sufficiently represented in the list of sites proposed by Member States, in relation to the number of species and habitats on the Commission's reference lists of habitat types and species for each bio-geographic region. The index for a Member State is calculated by summing up the indices for each bio-geographic region, and it is weighted by the proportion of the bio-geographical region's area within the Member State.

### Deadwood on forest land

Deadwood comprises all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Deadwood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

It is up to the countries to define the threshold level for the minimum size of diameter to be reported. The recommended threshold for the minimum length of standing and lying dead trees is 2 m or less. The recommended threshold for the minimum diameter of standing deadwood is 10 cm at breast height, and for lying deadwood is 10 cm mean diameter

### Water abstraction

The data are collected by Member States through the joint OECD/ Eurostat questionnaire on the state of the environment, inland waters section.

Fresh surface water is water which flows over, or rests on the surface of a land mass, natural watercourses such as rivers, streams, brooks, lakes, etc., as well as artificial watercourses such as irrigation, industrial and navigation canals, drainage systems and artificial reservoirs. Bank filtration is included under fresh surface water. Sea-water, and transitional waters, such as brackish swamps, lagoons and estuarine areas are not considered surface water. Groundwater available for annual abstraction is defined as the recharge less the long-term annual average rate of flow required to achieve ecological quality objectives for associated surface water.

Gross water abstraction is water removed from any source, either permanently or temporarily.



### Water quality in rivers

The data are collected through the European Environment Agency's Eurowaternet process. The class-defining values for BOD concentrations are based on the range of concentrations found in waterbase and only give an indication of the relative concentrations of BOD in each country.

The data sets for rivers include almost all Member States, but the time coverage varies from country to country. Consistent time-series trends are calculated, using only stations that have recorded concentrations for each year included in the time-series. Most countries measure organic matter as BOD over five days but a few countries measure BOD over seven days, which may introduce a small uncertainty in comparisons between countries.

### Fishing capacity

The data on fishing fleet are derived from the national registers of fishing vessels which are maintained pursuant to Regulation (EC) No 26/2004. The term 'fishing vessel' refers to mobile floating objects of any kind and size, operating in freshwater, brackish water and marine waters which are used for catching operations. As the fleet consists of vessels of different designs, determining fleet capacity requires information on a number of vessel characteristics, such as length, engine power and gross tonnage.

### Change in land cover

The data are derived from the CORINE land cover database of the European Environment Agency. The database includes

land cover information derived from images acquired by earth observation satellites. Versions exist for 1990 and 2000, and images from 2006 are currently being analysed.

### Forest trees damaged by defoliation

Defoliation classes refer to the following levels of degradation:

Defoliation class	Needle/leaf loss	Degree of defoliation
Class 0	Up to 10 %	None
Class 1	> 10-25 %	Slight (warning stage)
Class 2	> 25-60 %	Moderate
Class 3	> 60 - < 100 %	Severe
Class 4	100 %	Dead

The extensive monitoring of a systematic sampling network includes the annual assessment of crown condition of the trees, their nutrition and the forest soil condition on an extensive scale. This monitoring intensity stage is designated as 'level I'. The principal goal is to obtain information on the development of the crown condition on a European scale in connection with possible causes including air pollution. The extensive monitoring network comprises permanent plots throughout Europe arranged in a 16 × 16 km grid. The EU aggregate figure was compiled by the Joint Research Centre from the Forest Focus database of the level I programme (16 × 16 km grid).



## Chapter notes

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- <sup>(5)</sup> Directive 79/409/EEC on the conservation of wild birds.
- <sup>(6)</sup> Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
- <sup>(7)</sup> The figure of 17 % is the ratio of Natura 2000 land area to total EU land area. The Natura 2000 terrestrial area is based on the sum of the area of Sites of Community Importance (SCI) under the Habitats Directive and the area of Special Protected Areas (SPA) under the Birds Directive by Member State, corrected by deducting the amount of overlap between SCI and SPA. Marine areas, which add 129 982 km<sup>2</sup> and account for about 15 % of total Natura 2000 area, are not included in the calculation.
- <sup>(8)</sup> Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, amended by 97/11/EC and 2003/35/EC.
- <sup>(9)</sup> Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment.
- <sup>(10)</sup> Decision No 1600/2002/EC laying down the Sixth Community Environment Action Programme.
- <sup>(11)</sup> Commission communication, *Halting the loss of biodiversity by 2010 - and beyond - Sustaining ecosystem services for human well-being*, COM(2006) 216.
- <sup>(12)</sup> Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).
- <sup>(13)</sup> Commission communication, *On an EU forest action plan*, COM(2006) 302.
- <sup>(14)</sup> Directive 2000/60/EC establishing a framework for Community action in the field of water policy.
- <sup>(15)</sup> Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage.
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- <sup>(17)</sup> Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.
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- <sup>(29)</sup> Council Directive 91/271/EEC concerning urban waste-water treatment.
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# Public health

*'To promote good public health on equal conditions and improve protection against health threats'*

## Overview of main changes

The developments in the public health theme present a rather inconsistent picture. On the one hand, the headline indicator shows that people are not only living longer, but also living longer in good health. Improvements are also visible in reductions in deaths due to chronic diseases, suicides, annoyance by noise, and serious accidents at work. On the other hand, data clearly show that there remain challenges ahead related to the environmental determinants of health. Since 2000 people in the EU have been more exposed to ozone as well as to particulate matter. Nevertheless, the production of toxic chemicals, which has long been on an unfavourable path, has recently started to develop in a more favourable direction.

**Table 6.1: Evaluation of changes in the public health theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Healthy life years*	Health and health inequalities	
	 Deaths due to chronic diseases	 Suicides
		: Unmet needs for healthcare
	Determinants of health	
	 Production of toxic chemicals**	 Exposure to air pollution by particulate matter
		 Exposure to air pollution by ozone
		 Annoyance by noise***
		 Serious accidents at work


\* EU-25, from 2005


\*\* EU-25, from 2004


\*\*\* From 2005

### LEGEND:

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data





### Headline indicator

*People in the EU are living longer and healthier and the gap between men and women is narrowing*

Data for life expectancy and healthy life years (i.e. years without any serious health problems) in the EU indicate that there has been progress in promoting a healthier and longer life for EU citizens. While life expectancy at birth for men and women grew at an annual average rate of 0.4 % and 0.3 % respectively between 2002 and 2006, there has also been an increase of healthy life years at birth (0.2 % per year for females and 0.7 % for males) between 2005 and 2007. These differences between the sexes mean that men are catching up with women in terms of life expectancy as well as healthy life years.

### Health and health inequalities

*Less people die due to chronic diseases or suicide*

Improvements in health are apparent in the death rate due to chronic diseases which decreased by 1.9 % per year in the EU-27. Improvements in mental health, as reflected by suicides, are also observable, except for the middle aged. Since the year 2000, suicides in the EU-27 have been decreasing on average by 2.8 % annually among teenagers and by 4.8 % among people aged over 85 years.

For the EU-25 as a whole the poorer members of society are less able to afford to meet their needs for healthcare than the better off.

### Determinants of health

*A shift towards lower toxicity in chemical production*

Production of toxic chemicals in the EU-25 has slightly decreased with an annual average growth rate of 0.3 % over the period of 2004-2007. There has also been a favourable shift away from the production of the most toxic chemicals towards less harmful products.

Exposure to air pollution worsened between 2000 and 2007: exposure to particulate matter increasing by 1.6 %, and to ozone by 18.5 %. It is however not possible to discern clear trends as they have fluctuated nearly every year.

*Fewer people are annoyed by noise and the number of serious accidents at work has fallen*

The share of the population in the EU-27 declaring that they suffer from excessive noise favourably declined between the years 2005 and 2007. A longer time-series for the EU-15 shows that this indicator fluctuates considerably from year to year.

Efforts to improve health and safety in work places are showing progress in the EU-27. This improvement is essentially consistent with the target of a 25 % reduction of serious accidents at work over the period 2007 to 2012.

## Background

*Many EU policies from different areas consider public health matters*

Article 152 of the Treaty establishing the European Community states that 'a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities', thus acknowledging that public health is heavily dependent on policies in many other areas, including environment, agriculture, industry, trade, and social and economic policy.

*Healthy ageing, protection from health threats and improving health systems are the focus of the health strategy*

The current version of the EU health strategy<sup>(1)</sup> presents three strategic themes intended to meet the major challenges facing health in the EU. The first theme focuses on the promotion of healthy lifestyles to improve healthy ageing. The second, concerned with the protection from health threats, is an explicit objective in the Sustainable Development Strategy (EU SDS) and covers related subjects such as food security and environmental pollution. The third looks at the sustainability of health systems and the role of technological development in improving their efficiency.



At an operational level the health strategy is supported by the Second Programme of Community Action in the Field of Health 2008-2013<sup>(2)</sup>. This programme supports over 3 000 projects and other actions with the following overall objectives:

1. to improve citizens' health security,
2. to promote health, including the reduction of health inequalities, and
3. to generate and disseminate health information and knowledge.

### Box 6.1: Objectives related to public health in the EU Sustainable Development Strategy

Overall objective: To promote good public health on equal conditions and improve protection against health threats.

Operational objectives and targets:

- Improving protection against health threats by developing capacity to respond to them in a co-ordinated manner.
  - Further improving food and feed legislation, including review of food labelling.
  - Continuing to promote high animal health and welfare standards in the EU and internationally.
  - Curbing the increase in lifestyle-related and chronic diseases, particularly among socio-economically disadvantaged groups and areas.
  - Reducing health inequalities within and between the Member States by addressing the wider determinants of health
- and appropriate health promotion and disease prevention strategies. Actions should take into account international cooperation in forums like WHO, Council of Europe, OECD and UNESCO.
- Ensuring that by 2020 chemicals, including pesticides, are produced, handled and used in ways that do not pose significant threats to human health and the environment. In this context, the rapid adoption of the Regulation for the registration, evaluation, authorisation and restriction of chemicals (REACH) will be a milestone, the aim being to eventually replace substances of very high concern by suitable alternative substances or technologies.
  - Improving information on environmental pollution and adverse health impacts.
  - Improving mental health and tackling suicide risks.

## Potential linkages

The two sub-themes 'determinants of health' and 'health and health inequalities' are causally related, and many issues within the public health theme are therefore linked to each other. For example, air quality and exposure to airborne pollutants, exposure to toxic chemicals and annoyance by noise all influence the state of health, e.g. by enhancing the risk of developing chronic diseases.

Public health issues are linked to those of socio-economic development. Healthy people are more productive and represent added value for the economy. Furthermore, illness not only leads to losses in production but also constitutes a financial burden for the health care system. On the other hand, better health care can result in greater numbers of elderly persons who are dependent on the social care system.

There is a strong linkage between the public health theme and the social inclusion theme as the socio-economic status of a person is an important determinant of health. A substantial amount of evidence supports the link between higher income and a higher social status, on the one hand, and better health on the other<sup>(3)</sup>. For poorer people the indirect as well as direct expense involved may impede their access to health services and limit their possibilities for leading a healthy lifestyle. Income impacts how and where people live and thus their exposure to noise and pollution. Education level also plays an important role in maintaining good health. Low education is linked with more stress and lower self-confidence resulting in poorer health. Another important factor for health that is linked to the social inclusion theme is the social

*Linkages within the public health theme*

*Linkages to the socio-economic development theme*

*Linkages to the social inclusion theme*



network. Socially excluded people benefit less from the support of their social environment, which constitutes an important health resource.

**Linkages to environmental issues in other themes**

There are also links with environmental issues which are addressed in a number of the other themes, such as sustainable consumption and production, natural resources, climate change and energy, and sustainable transport. Emissions from industry and transport, the irresponsible disposal of chemicals, and pesticide use in agriculture can cause harm. Shifts in climatic zones will also influence the ranges of insect-borne diseases.

**Further reading**

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## Healthy life years

The number of years that men and women in the EU-25 are expected to live in a healthy condition has increased slightly between 2005 and 2007. A child born in 2006 would be expected to live 62 years free of disability and for 65-year-olds there is an expectation of a further nine years in good health



Although the average life expectancy at birth is some six years higher for women than men, a child of either sex born in 2006 would be expected to live, on average, 62 years free of disability. For 65-year-olds, there is an expectation of a further nine years in good health, and the difference in life expectancy between the sexes has fallen to three-and-a-half years.

EU-25 life expectancies at birth grew at an annual average rate of 0.3 % for women and 0.4 % for men over the period 2002 to 2006, women reaching 82.4 years and men 76.3 years in 2006. The growth rates at age 65 were somewhat higher, representing 1.2 % on average for women and 1.5 % for men, from 2002 to 2006. The differential between the female and the male growth rate has narrowed the gap between the two sexes.

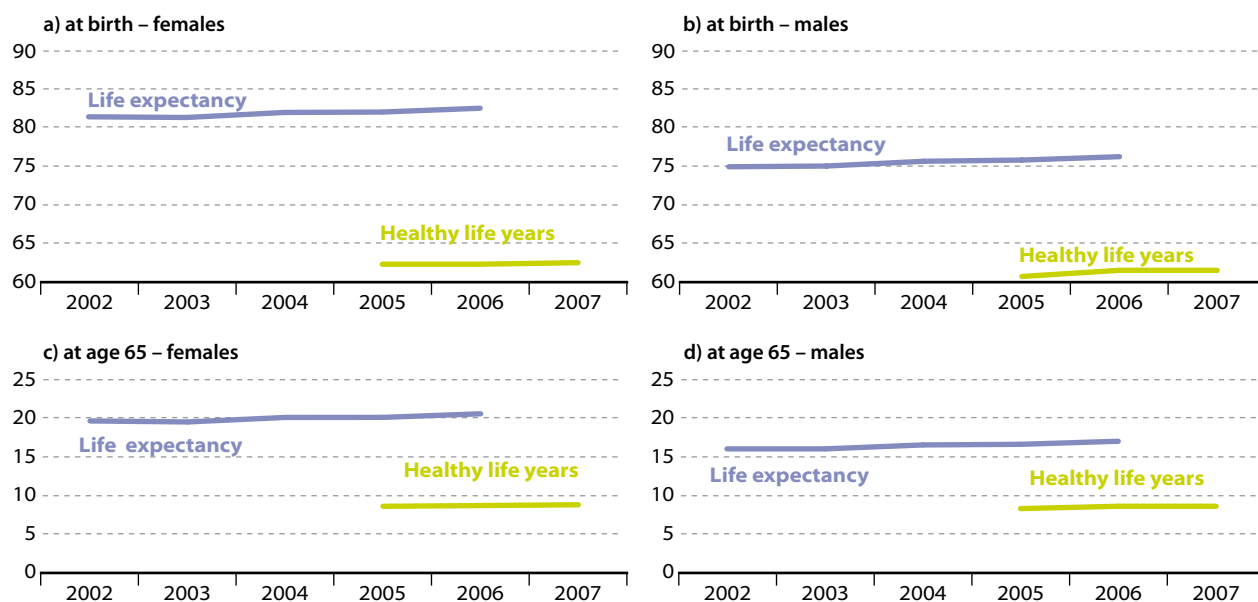
Healthy life years are growing faster than life expectancy both at birth and at age 65 for men, whilst the contrary is true for women. Healthy life years at birth in the EU 25 grew at 0.2 % per year on average for females, compared to 0.7 % for males over the period 2005 to 2007.

### Analysis

*Life expectancy at birth is six years higher for women than men, but at the age of 65 the difference is 3½ years*

*The gap between women and men is narrowing*

Figure 6.1: Healthy life years and life expectancy, EU-25 (years)



NB: 2007 data for healthy life years are Eurostat estimates.

Source: Eurostat (tsdph100, tsdph220).

**Indicator relevance**

An improvement in healthy life years is considered as one of the main health goals for the EU. The indicator combines information on both the quality and length of life for newly born populations as well as elderly populations. Therefore, it reflects that the emphasis has shifted from measuring health simply in terms of longevity to also considering well-being in terms of the absence of morbidity.

‘Healthy life years’ is not shown here at national levels because cultural differences may lead to possible misinterpretation. The indicator is, however, sufficiently robust to provide reliable information on the evolution at EU level over time.

**Definition**

Healthy life years measures the number of years that a person is still expected to live in a healthy condition. It is compiled separately for males and females, at birth and age 65. The indicator combines information on mortality and morbidity. It is based on age-specific prevalence (proportions) of the population in healthy and unhealthy conditions and age-specific mortality information (age-specific probabilities of dying). A healthy condition is defined by the absence of limitations in functioning/disability.

Life expectancy is defined as the mean number of years still to be lived by a person at a certain exact age (e.g. at birth or at age 65), if subjected throughout the rest of his or her life to the current mortality conditions.



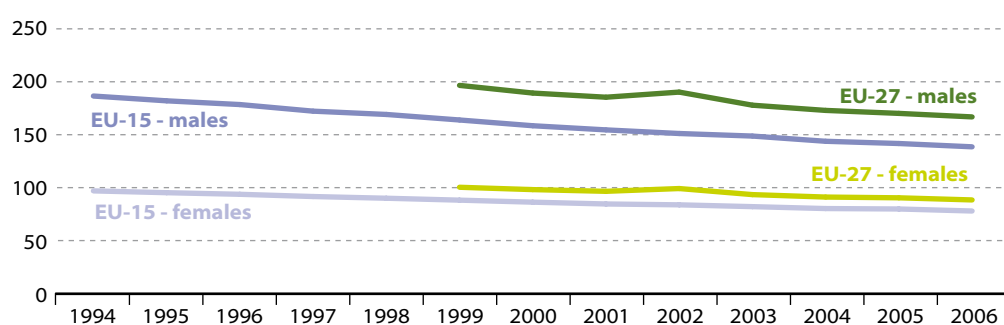
## Deaths due to chronic diseases

Between 2000 and 2006, deaths due to chronic diseases have significantly fallen for under-65s in the EU-27



The majority of the population in high and middle income countries dies from chronic diseases. In the population aged under 65 years, deaths due to chronic diseases occur much less frequently than in the older population but still account for nearly 60 % of all deaths. The trend of deaths due to chronic diseases in the population aged less than 65 years has developed favourably between 2000 and 2006. They have decreased by 1.9 % per year in the EU-27 and at a slightly higher pace (2.0 %) in the EU-15. However, the average decline in the EU-15 has slowed down compared to the previous six years (1994-2000), when it was 2.4 % per year.

Deaths due to chronic diseases are almost twice as common for men than for women, but the gap has slowly narrowed between 2000 and 2006 (average annual declines: 2.1 % men, 1.7 % women). One reason for the closing gap could be the increasing efforts at both national and Community level to promote healthier lifestyles, such as healthy eating, taking regular exercise, better managing stress and avoiding harmful habits such as smoking and alcohol consumption.



**Figure 6.2:**  
Death rate due to chronic diseases, by gender, population aged under 65 (per 100 000 persons)

Source: Eurostat (tsdph210)

Many cases of chronic diseases are caused or exacerbated by a small number of risk factors: smoking, obesity, lack of physical activity, poor diet, and alcohol consumption. The high mortality of chronic diseases, combined with the fact that many cases of these diseases are preventable, has led to increasing efforts to reduce their incidence by preventing lifestyle-related risk factors. The Sustainable Development Strategy includes the objective of ‘curbing the increase in lifestyle-related and chronic diseases.’

### Indicator relevance

This indicator is defined as the standardised death rate of certain chronic diseases for persons aged less than 65 years, by gender. The following diseases have been considered: malignant neoplasms, diabetes mellitus, ischaemic heart diseases, cerebrovascular diseases, chronic lower respiratory diseases, and chronic liver diseases.

### Definition





## Suicides



Suicide deaths have significantly declined between 2000 and 2006 in the EU 27. While progress has been seen amongst the youngest and, especially, the oldest age groups, the suicide rate has risen slightly in the 50-54 age group

### Analysis

#### Suicide rates vary between age groups

The suicide death rate is an indicator of mental health. Overall, it declined favourably in the EU-27 between 2000 and 2006 by an annual average of 2.2 %, although there are differences across age groups. While in the EU-27 suicides in the young group aged 15-19 years and particularly in the oldest group aged over 85 years have fallen by 2.8 % and 4.8 % per year respectively, a countertrend among people aged 50-54 years can be observed. In this age group suicide deaths have slightly risen by 0.5 % per year on average.

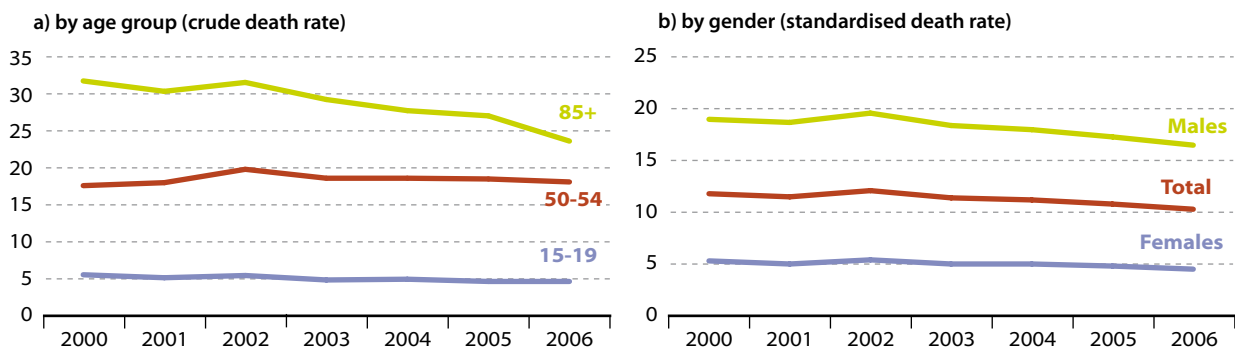
#### Suicide is more common amongst men than women

Suicide death rates vary not only across age groups but also between the sexes, and are roughly three times more common amongst men than women in the young and middle-age group and five times more common in the oldest age group. However, the gap between men and women is closing as suicides by men have been declining at a faster pace.

#### Strong variations between Member States

The rates and their developments also vary considerably across Member States. While many of the northern and north-eastern Member States show the highest rates, there have also been substantial declines in most of these countries. However, in some Member States suicides tended to increase since 2000.

Figure 6.3: Suicide death rate, EU-27 (per 100 000 persons)



NB: Provisional data.

Source: Eurostat (tsdph240, tps00122)

### Indicator relevance

One of the objectives of the Sustainable Development Strategy is ‘improving mental health and tackling suicide risks’. Suicide is the major cause of death after chronic diseases. The suicide death rate is an important indicator of mental health. In general, suicide rates increase with age and this indicator focuses on three particular age groups: late adolescence, late middle age and the old.



This indicator is defined as the crude death rate from suicide and intentional self-harm per 100 000 people, by age group. However, in the gender breakdown the standardised death rate is used.

### Definition

Figures should be interpreted with care as suicide registration methods vary between countries and over time. Moreover, the figures do not include deaths from events of undetermined intent (part of which should be considered as suicides) and attempted suicides which did not result in death.

## Unmet needs for healthcare

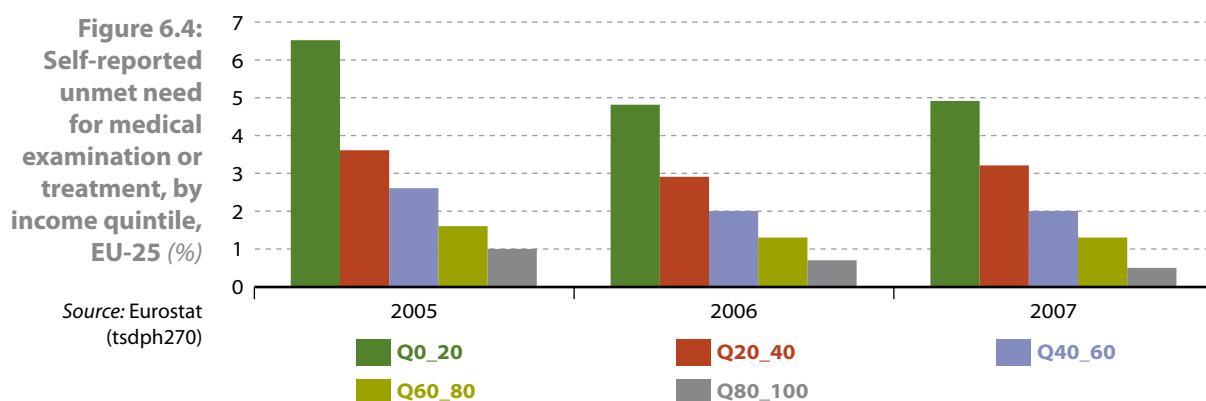
The share of people reporting that they could not afford a medical examination or treatment is higher in the lower income groups, which is indicative of inequalities in access to health care between income groups

### Analysis

*The cost of medical treatment is an obstacle to the poorest people in some Member States*

This indicator highlights the inequalities in access to medical care across income classes. Less than 1 % of the highest income group perceive themselves as unable to afford a medical examination or treatment when they need it. In general this is also the case at the Member State level. As income decreases the proportion of those who consider expense as an obstacle to seeking medical care increases. The extent of this gradient across income groups varies considerably by country. It is negligible in Denmark, Slovenia and the UK and rather high in Latvia, Portugal and Romania.

Although changes in the questionnaire between the annual surveys in some Member States prevent the evaluation of progress in this indicator over time, the gradient across income groups is consistent throughout the survey period.



### Indicator relevance

Income and socio-economic status are linked to health and life expectancy and the indicator shows inequalities in access to health care between income quintiles. Reducing health inequalities within and between Member States is one of the objectives of the Sustainable Development Strategy.

### Definition

This indicator is defined as the share of the population reporting that they could not afford a medical examination or treatment, split by income quintile. Income quintiles represent the income of respondents relative to the national population. For example, if a respondent belongs to the quintile Q0\_20, they are amongst the 20 % with the lowest income in their country.

## Production of toxic chemicals

There has been a moderately favourable decrease in the production of toxic chemicals between 2004 and 2007 in the EU-25



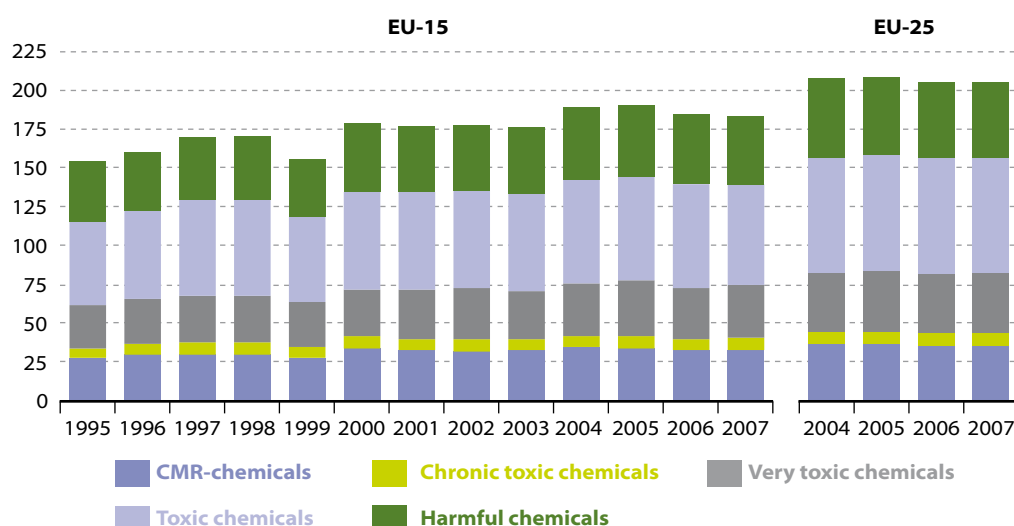
Since 2004 the production of toxic chemicals in the EU-25 has slightly decreased, by 0.3 % per year on average. There has also been a favourable shift away from the production of the most toxic chemicals towards safer products. The share of toxic chemicals in the total production of chemicals in the EU-25 decreased by 2.1 percentage points between 2004 and 2007.

A longer term view is given by data for EU-15. From 1995 to 2000 production of total toxic chemicals in the EU-15 grew at an unfavourable rate of 3 % on average per year, with the strongest growth occurring in the most toxic classes. This trend has not yet reversed, but production remained relatively stable between 2000 and 2007, with a 0.2 % average annual growth rate over this period. This effect can partly be explained by the global economic downturn of 2001-2003 which resulted in a fall in production for all industrial areas, including chemicals.

In June 2007 a regulation for the registration, evaluation, authorisation and restriction of chemicals (REACH)<sup>(4)</sup> entered into force. The decrease since 2005 suggests that some companies may have already adapted their production in advance.

### Analysis

*Production of toxic chemicals has decreased slightly since 2004 and there has been a shift towards less toxicity*



**Figure 6.5: Index of production of toxic chemicals, by toxicity class (million tonnes)**

Source: Eurostat (tsdph320)

An objective of the Sustainable Development Strategy is to ensure 'that by 2020 chemicals, including pesticides, are produced, handled and used in ways that do not pose significant threats to human health and the environment, the aim being to eventually replace substances of very high concern by suitable alternative substances or technologies'. In this context, the recent adoption of the REACH regulation represents an important milestone. Proposals for a regula-

### Indicator relevance



tion on the placing of plant protection products on the market and for a framework directive on the sustainable use of pesticides were adopted by the Commission in 2006 and should enter into force in 2009. Adoption and implementation of these proposals will lead to significant reductions in the risks from pesticide production and use.

**Definition** This indicator presents the trend in aggregated production volumes of toxic chemicals, broken down into five toxicity classes. The toxicity classes, starting with the least dangerous, are: harmful chemicals, toxic chemicals, very toxic chemicals, chronic toxic chemicals and CMR (carcinogenic, mutagenic and reprotoxic) chemicals.

## Exposure to air pollution by particulate matter

Exposure to air pollution by particulate matter has risen slightly in the EU-27 between 2000 and 2007 and there has been no progress towards the 2010 target



Between 2000 and 2007, air pollution by particulate matter rose in the EU-27 by 0.5 micrograms per cubic metre. While the 2005 target was easily met, reaching the 2010 target of 20 micrograms will require a yearly decrease of 2.7 micrograms from 2007 onwards.

The peaks in 2003 and 2006 were at least partially due to severe heat waves during those summers. The hot, dry conditions led to stagnant air in which pollutants accumulated. In 2003, at least, conditions were exacerbated by the prevalence of wildfires in south-western Europe producing large quantities of particulates which were then transported to the northern and eastern parts of Europe<sup>(5)</sup>.

Urban exposure to particulates varies from country to country. Apart from sporadic wildfires, the Member States bordering the Mediterranean also suffer from dust blown from North Africa.

### Analysis

*Exposure to airborne particulate matter has not decreased and there has been no progress towards the 2010 target*



**Figure 6.6:** Urban population exposure to air pollution by particulate matter, EU-27 (micrograms per cubic metre)

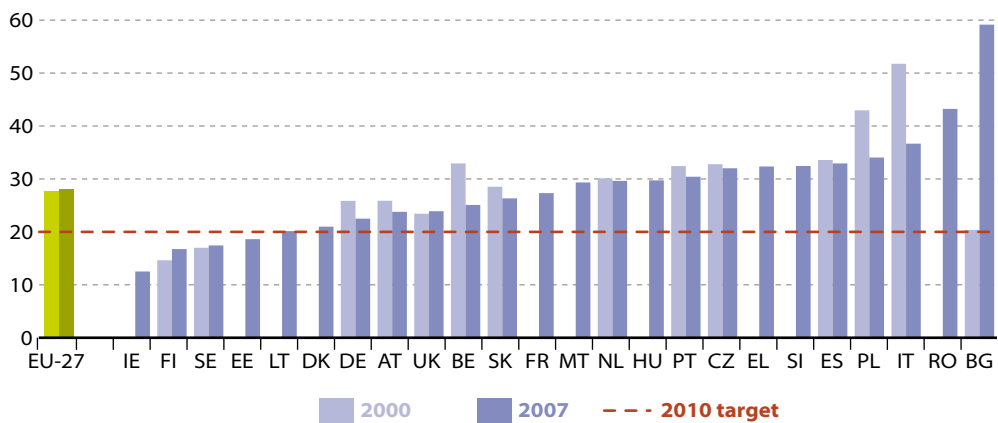
Source: European Environment Agency, Eurostat (tsdph370)





**Figure 6.7: Urban population exposure to air pollution by particulate matter, by country**  
(micrograms per cubic metre)

Source: European Environment Agency, Eurostat (tsdph370)



### Indicator relevance

Particulate matter (PM10) comprises particles of less than 10 micrometers and can be carried deep into the lungs where they can cause inflammation and worsening the condition of people with heart and lung diseases. Natural sources include dust and sand and smoke from forest fires. The major human source is combustion.

Epidemiological and toxicological studies indicate that there is an association between long and short-term exposure to fine particulate matter and health. However, there is also extensive contradictory evidence given the difficulties in isolating the effects of particulates from other potential causes.

A key objective of the Sustainable Development Strategy is to prevent and reduce environmental pollution. EU legislation has set annual limit targets for 2005 and 2010 of 40 and 20 micrograms of PM10 per cubic metre respectively<sup>(6)</sup>.

### Definition

The indicator shows the population-weighted annual mean concentration of particulate matter at urban background stations in agglomerations.

## Exposure to air pollution by ozone

Exposure to ozone has increased in the EU-27 between 2000 and 2007 by 2.5 % per year on average, with considerable variation from one year to the next

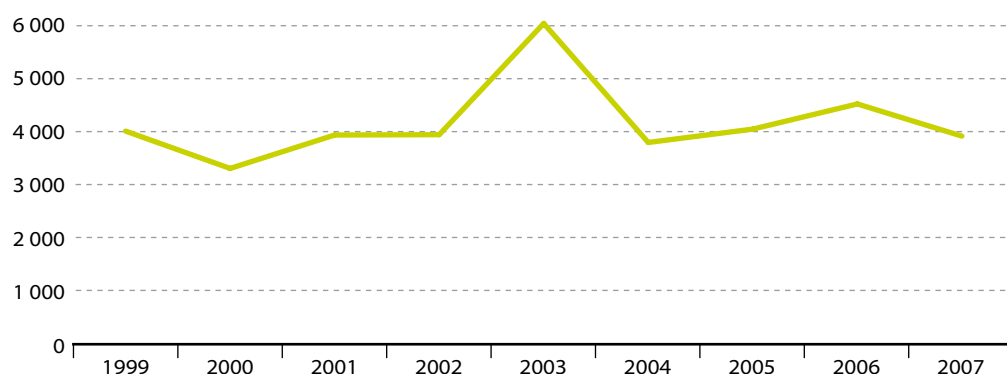


Although exposure to ozone varies considerably from year to year, overall it has risen at an annual average rate of 2.5 % since the year 2000. The high exposure in the year 2003 is related to the heat wave in that summer<sup>(7)</sup>. A lesser peak also occurred in 2006 for similar reasons.

Urban exposure to ozone widely varied between countries, partly due to differences in climate and vegetation. In general, southern countries, with higher summer temperatures, such as Greece and Malta show higher exposure levels than the cooler northern countries such as the UK, Finland and the Netherlands. Nevertheless, peaks occurred throughout the EU in 2003 and 2006 due to exceptionally high temperatures in those years. This increase was most pronounced in the northern countries, which showed higher relative increases compared to the southern countries.

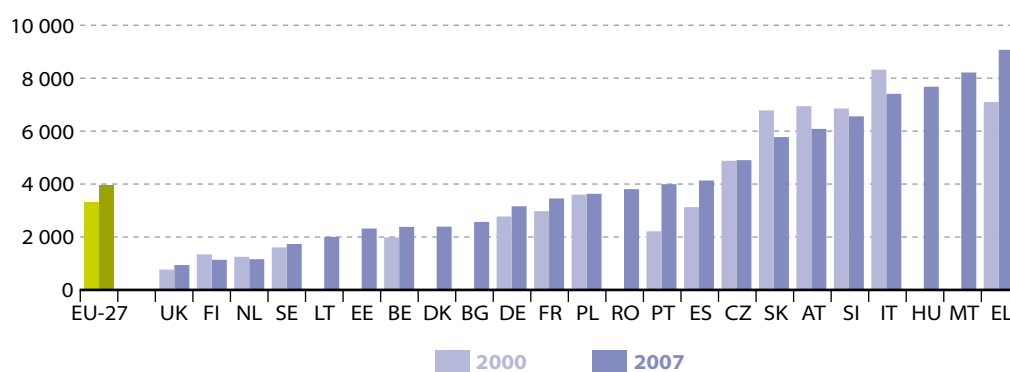
### Analysis

*Exposure to ozone has risen, with a peak in 2003*



**Figure 6.8:** Urban population exposure to air pollution by ozone, EU-27 (micrograms per cubic metre day)

Source: European Environment Agency, Eurostat (tsdph380)



**Figure 6.9:** Urban population exposure to air pollution by ozone, by country (micrograms per cubic metre day)

Source: European Environment Agency, Eurostat (tsdph380)

**Indicator relevance**

Ozone is a highly reactive gas, which causes serious health problems and damage to the ecosystem, agricultural crops and materials. Human exposure to elevated ozone concentrations can give rise to respiratory problems and decreases in lung function. Ozone results from human actions (mainly transport and industry) and from vegetation in the presence of sunlight.

The air quality framework directive<sup>(8)</sup> and the more recent first daughter directive on ambient air quality and cleaner air for Europe<sup>(9)</sup> describe the basic principles for the assessment and management of air quality. The third daughter directive<sup>(10)</sup> relating to ozone in ambient air established a 2010 target and a long-term objective for 2020. A maximum daily eight-hour mean shall not exceed 120 micrograms of ozone per cubic metre in more than 25 days per calendar year, averaged over three years. However, this target cannot be monitored with the current indicator.

**Definition**

The indicator shows the population-weighted yearly sum of maximum daily 8-hour mean ozone concentrations above a threshold of 70 micrograms of ozone per cubic metre at background stations in urban areas.

## Annoyance by noise

Over the short period from 2005 to 2007, the share of people in the EU-27 feeling annoyed by noise declined significantly

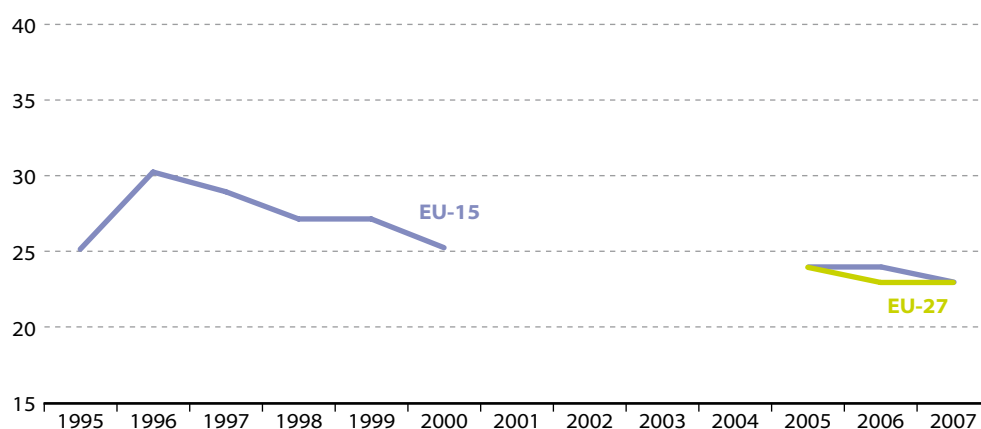


Between 2005 and 2007, the percentage of the population who declared that they suffer from noise declined by 2.1 % per year on average. Possible explanations for this decline are close-downs of heavy industry, quieter cars resulting from EU legislation<sup>(11)</sup>, and the replacement of tramways by subways and buses. Although these most recent data cannot be compared directly to the earlier time-series for EU-15, this earlier series is indicative of a longer term trend in the reduction of noise annoyance.

The country split shows that large reductions in noise annoyance have occurred in Hungary, the Czech Republic and Slovakia, and to a lesser extent in Lithuania, the UK and Luxembourg. On the other hand, in Cyprus, where the degree of annoyance was already high, Estonia, Germany, Greece and Sweden the situation worsened between 2005 and 2007.

### Analysis

*The share of population annoyed by noise has been favourably declining, particularly in some eastern Member States*



**Figure 6.10:** Proportion of population living in households considering that they suffer from noise (%)

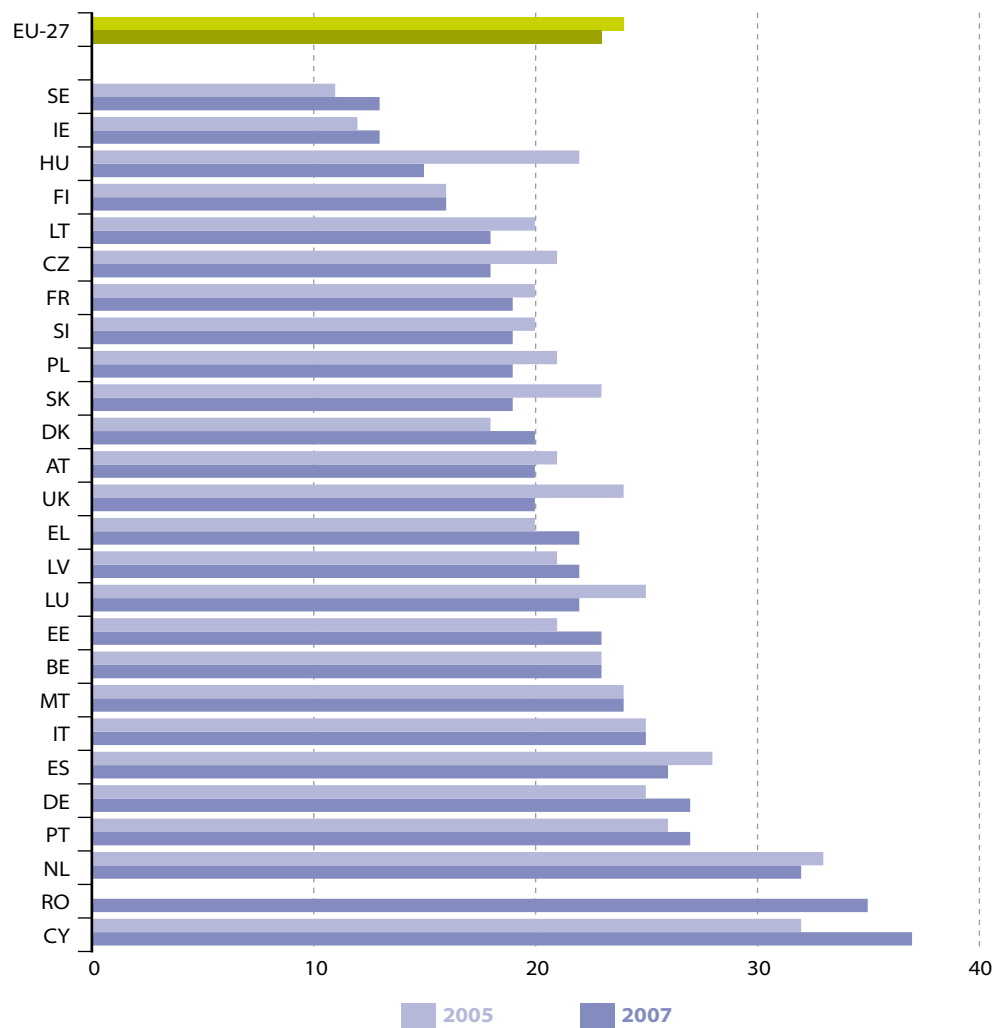
Source: Eurostat (tsdph390)

*NB:* There was a change in the data collection between 2000 and 2005 and the two series can therefore not be compared.



**Figure 6.11:**  
Proportion of  
population living  
in households  
considering  
that they suffer  
from noise,  
by country (%)

Source: Eurostat  
(tsdph390)



### Indicator relevance

At high sound pressure levels, noise is a health hazard and can cause hearing loss and cardiovascular disease. Even at moderate levels which do not cause physical damage or pain, noise can lead to sleep disturbance, stress and increased blood pressure, and, by masking other sounds, can lead to accidents. The current indicator is a subjective measure related to housing satisfaction and how poor housing conditions impact on health: it is not an objective measure of exposure to noise.

'Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimise impacts on health' is an objective of the Sustainable Development Strategy. Noise from other sources, although not specifically mentioned in the Strategy, would be included under general objectives aimed at protecting against health threats.

### Definition

The indicator shows the percentage of the total population who declare that they are affected either by noise from neighbours or from the street (traffic, business, factories, etc.).

## Serious accidents at work

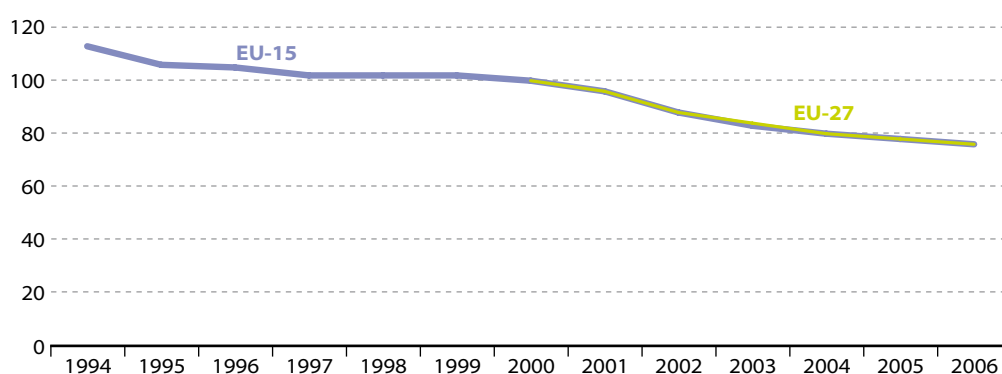
With the substantial decrease in serious accidents at work since 2000 across the EU-27 countries, the indicator presents a favourable development



The incidence of serious accidents at work decreased in the EU-27 by 4.5 % per year on average between 2000 and 2006. This rate of decrease is close to the 5 % per year which will be needed in order to meet the target of an overall reduction of 25 % over the period 2007 to 2012.

This decline should be seen in light of the decline in heavy industry in the EU and the increasing use of automation.

Despite this strong downward trend, serious accidents at work remain at a high level: in 2005 there were nearly 4 million serious accidents at work.



### Analysis

*Serious accidents at work are still at a high level but on track to meet the target for 2012*

**Figure 6.12:**  
Serious accidents at work  
(index 2000 = 100)

Source: Eurostat  
(tsdph400)

Although in some cases, serious accidents at work may result in only a few days of lost productivity, they may also lead to permanent disability or death. In order to protect the lives and health of workers, the principal objective of the Community strategy 2007-2012 on health and safety at work<sup>(12)</sup> is to reduce by 25 % the total incidence rate of accidents at work per 100 000 workers in the EU-27 over this period. Under the Lisbon Strategy, the Member States have acknowledged the major contribution that guaranteeing quality and productivity at work can play in promoting economic growth and employment.

### Indicator relevance

The index is based on the incidence rate of serious accidents at work, where 'serious accidents' are defined as accidents which result in more than three days' absence and the rate is the number of accidents per 100 000 persons in employment.

### Definition



## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Healthy life years

The indicator is calculated following the widely used Sullivan method. It is based on prevalence measures of the age-specific proportion of population with and without disabilities and on mortality data. Its interest lies in its simplicity, the availability of its basic data and its independence of the size and age structure of the population. Nevertheless, cultural differences in reporting disability can influence the indicator. For 1995-2001, for the EU 15 Member States, the source was the European Community household panel (ECHP). From the reference year 2004 onwards, the Community statistics on income and living conditions (EU-SILC) is used, in which the 'unhealthy' condition is defined by the limitation in people's normal activities because of health problems for at least the previous six months.

Accuracy is good even if there are some general restrictions. Results for the period 1995-2001 are comparable and the extrapolation over 2002 and 2003 ensures a similar comparability for the estimated values for these two years. Actually, the restrictions on the comparability across countries apply on the 'level' of the healthy life-years but not on its evolution. Due to transition between end-ECHP and start-EU-SILC, there are disruptions in series between 2003 and 2005.

### Life expectancy

Data are compiled from information supplied by the national statistical institutes. National methods are described in the Eurostat publication *Demographic statistics: Definitions and methods of collection in 31 European countries*. Absolute figures received from the national statistical institutes are validated by Eurostat before being sent to the database.

### Deaths due to chronic diseases

Causes of death are classified by the 65 causes of the 'European shortlist' of causes of death. This shortlist is based on the international statistical classification of diseases and related health problems (ICD), developed and maintained by the World Health Organization. Chronic diseases comprise malignant neoplasms, diabetes mellitus, ischaemic heart diseases, cerebrovascular diseases, chronic lower respiratory diseases and chronic liver disease. Standardised death rates (SDRs) take into account differences in population structure by using a European standard population. SDRs therefore allow direct comparisons between countries.

### Suicides

Suicide mortality statistics are collected under the international classification of diseases and related health

problems group 'suicide and intentional self harm' (ICD-10 codes X60-X84). Procedures for recording a death as a suicide are not uniform and some of the variations in suicide across Europe may be due to differences in the process of death registration. Moreover, trends in suicide can be influenced by changes in attitudes towards the registration of deaths which occur over time within a country.

### Unmet needs for healthcare

The data source is the European Statistics of Income and Living Conditions (EU-SILC) surveys, which contain a small module on health, including several questions on the unmet needs for health care. The reference population is private households as well as current members over 15 years of age within the national territory at the time of the data collection.

The equivalised income quintiles are constructed by country; it is an ordered measure of the equivalised income of a respondent. If a respondent belongs to the first quintile (0-20%), it means that they are amongst the 20% of respondents of their country with the lowest equivalised income during the income reference period. The equivalised income is calculated from the household income taking into account household size and composition.

### Production of toxic chemicals

The indicator is based on 162 identified toxic chemicals out of a total of 387 chemicals from the European production statistics database (Prodcom). The selected chemicals have been chosen from the Prodcom sectors 'Manufacture of industrial gases', 'Manufacture of dyes and pigments', 'Manufacture of other inorganic basic chemicals', 'Manufacture of other organic basic chemicals' and 'Manufacture of fertilizers and nitrogen compounds'.

The indicator presents the trend in aggregated production volumes of toxic chemicals, broken down into five toxicity classes. The toxicity classes, beginning with the most dangerous, are: Carcinogenic, Mutagenic and Reprotoxic (CMR-chemicals); Chronic toxic chemicals; Very toxic chemicals; Toxic chemicals and chemicals classified as harmful.

### Exposure to air pollution by particulate matter

Air quality data are collected on an annual basis according to the exchange of information Decision 97/101/EC (amended by Decision 2001/752/EC). The urban population exposure to air pollution by particulate matter is calculated as the population-weighted annual mean concentration of particulate matter [in mg/m<sup>3</sup>].

### Exposure to air pollution by ozone

Air quality data are collected on an annual basis according to the exchange of information Decision 97/101/EC (amended by Decision 2001/752/EC). The urban population exposure to air pollution by ozone is calculated as the population-





weighted yearly sum of maximum daily eight-hour mean ozone concentrations above a threshold of 70 micrograms ozone per m<sup>3</sup> [in (mg/m<sup>3</sup>)-day].

#### Annoyance by noise

The data source is the European Statistics of Income and Living Conditions (EU-SILC) surveys. The reference population is private households as well as current members over 15 years of age within the national territory at the time of the data collection.

#### Serious accidents at work

The harmonised data on accidents at work are collected in the framework of the European statistics on accidents at work. The data refer to accidents at work resulting in more than three days' absence from work (serious accidents) and fatal accidents. A fatal accident is defined as an accident which leads to the death of a victim within one year of the accident. The data are given as an annual index of the incidence rate of serious accidents at work which is the number of accidents at work resulting in more than three days' absence per 100 000 persons in employment.

## Chapter notes

- (1) European Commission, *White Paper - Together for Health: A Strategic Approach for the EU 2008-2013*, COM(2007) 630.
- (2) Decision No 1350/2007/EC establishing a second programme of Community action in the field of health (2008-13).
- (3) Commission on Social Determinants of Health, *Closing the gap in a generation: health equity through action on the social determinants of health*, World Health Organization, Geneva, 2008.
- (4) Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency.
- (5) Hodzic A., Madronich, S., Bohn, B., Masiie, S., Menut, L., and Wiedinmyer, C., 'Wildfire particulate matter in Europe during summer 2003: meso-scale modeling of smoke emissions, transport and radiative effects', *Atmospheric Chemistry and Physics*, 2007, Vol. 7, pp. 4705-4760.
- (6) Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
- (7) Johnson H., Kovats S., McGregor, G., Stedman, J., Gibbs, M., and Walton, H., 'The impact of the 2003 heatwave on daily mortality in England and Wales and the use of rapid weekly mortality estimates', *Euro Surveillance*, 2005, Vol. 10, pp. 168-171.
- (8) Directive 96/62/EC on ambient air quality assessment and management.
- (9) Directive 2008/50/EC, op. cit.
- (10) Directive 2002/3/EC relating to ozone in ambient air.
- (11) Directive 92/97/EEC on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles; Directive 96/20/EC relating to the permissible sound level and the exhaust system of motor vehicles.
- (12) Commission communication, *Improving quality and productivity at work: Community strategy 2007-2012 on health and safety at work*, COM(2007) 62.



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# Social inclusion










*'To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being'*

## Overview of main changes

The trends observed in the social inclusion theme have been mixed. The overall risk of poverty has not changed in the EU-25 since 2005, but in the EU-27 its intensity has deepened and income inequalities have grown. While there have been favourable developments in reducing the share of people with low educational attainment or living in jobless households or affected by long-term unemployment, trends in the share of early school leavers and in the participation in lifelong learning were unfavourable. The share of working poor has not changed since 2005.

*Favourable developments primarily in labour market indicators*


**Table 7.1: Evaluation of changes in the social inclusion theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Risk of poverty*	<b>Monetary poverty and living conditions</b>	
		 Intensity of poverty**
		 Income inequalities**
	<b>Access to labour market</b>	
	 Jobless households	 Working poor*
		 Long-term unemployment
		: Gender pay gap
	<b>Education</b>	
	 Early school leavers	: Public expenditure on education
		 Adults with low educational attainment
		 Lifelong learning


\* EU-25, from 2005


\*\* From 2005

### LEGEND:

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



### Headline indicator

#### *No change in risk of poverty*

The proportion of people living at risk of poverty has remained constant since 2005. In 2007, one-sixth of EU-25 inhabitants lived below the poverty risk threshold, defined as 60 % of their country's median equivalised disposable income. Children, young people of 16-24 years old, the elderly and persons with low education as well as women are at a higher risk of poverty than the average. Single households are at a growing risk of poverty, with single parents bearing the highest risk of 34 %.

### Monetary poverty and living conditions

#### *Deepening poverty intensity and increasing income inequality*

The intensity of poverty deepened from 2005 to 2007. The median income of people at risk of poverty sank from 22 % below the poverty risk threshold to 23 %. In addition, income inequality, measured as the ratio of the income earned in the top income quintile to the income earned in the bottom quintile, increased throughout the EU-27 over the same period. In 2007, the richest 20 % of the population earned five times as much as the poorest 20 %.

### Access to the labour market

#### *Decrease in jobless households and long-term unemployment*

Between 2000 and 2007 the share of adults living in jobless households declined considerably. The share of children also fell, but to a lesser extent.

The share of people who are at risk of poverty despite being employed has not changed since 2005 and remains at 8 %.

#### *No change in working poor and gender pay gap*

Between 2000 and 2007 the share of economically active persons unemployed for more than one year has declined. The gender pay gap did not narrow between 2006 and 2007.

### Education

#### *2010 target for early school leavers hard to reach*

Since 2000, spending on education as a proportion of GDP has moderately increased in EU-27 countries. Between 2000 and 2006, the EU-27 experienced a certain decline of the proportion of early school leavers. However, the decrease discontinued in 2007. Progress in this area seems too slow to reach the 2010 target of 10 %.

#### *Low educational attainment reduced in all age groups*

Between 2000 and 2007, there has been a decrease in low educational attainment for all age groups. Older people in general have the lowest educational level.

#### *Lifelong learning more popular, but more efforts necessary*

Lifelong learning has become more popular since 2000. Almost 10 % of adults have been participating in education and training in the four weeks immediately before being interviewed. Although this increase is encouraging, additional progress will be needed to meet the target of 12.5 % for 2010.

## Background

#### *Lisbon summit and Gothenburg Council stressed importance of social inclusion*

'Social inclusion, demography and migration' is one of the seven key challenges identified in the renewed EU Sustainable Development Strategy (EU SDS). Social inclusion has been an important part of EU policy since the establishment of the European Union. The Lisbon summit <sup>(1)</sup> in 2000 agreed to take steps to make a decisive impact on the eradication of poverty in the EU by 2010. The Gothenburg Council <sup>(2)</sup> in 2001 confirmed the social dimension



as one of three dimensions of sustainable development. A set of common indicators to compare progress and identify best practice was agreed on in Laeken in 2001 <sup>(3)</sup>.

In 2006, the European Council agreed on a new framework for the social protection and inclusion process <sup>(4)</sup> with three overarching objectives:

- to promote social cohesion, equality between men and women, and equal opportunities for all through adequate, accessible, financially sustainable, adaptable and efficient social protection systems and social inclusion policies,
- to promote effective and mutual interaction between the Lisbon objectives <sup>(5)</sup> and the EU SDS,
- to promote good governance, transparency and the involvement of stakeholders in the design, implementation and monitoring of policy.

*Three overarching objectives for social inclusion and a new set of indicators*

The three specific objectives relating to the social inclusion strand are for Member States to promote a decisive impact on the eradication of poverty and social exclusion by ensuring:

- access for all to the resources, rights and services needed for participation in society, preventing and addressing exclusion, and fighting all forms of discrimination leading to exclusion;
- the active social inclusion of all, both by promoting participation in the labour market and by fighting poverty and exclusion;
- that social inclusion policies are well-coordinated and involve all levels of government and relevant actors, including people experiencing poverty. These policies must be efficient, effective and mainstreamed into all relevant public policies, including economic, budgetary, education and training policies and structural fund (notably European Social Fund) programmes.

Member States agreed to coordinate their policies based on the ‘open method of coordination’ (OMC) <sup>(6)</sup> to foster policy exchange and mutual learning. The Social Protection Committee has gradually adopted a new set of indicators for this process <sup>(7)</sup>.

The Joint Report on Social Protection and Social Inclusion 2009 <sup>(8)</sup> emphasises the role of social policies in mitigating the impact of the economic crisis on the most vulnerable and on the economy as a whole, while paving the way for recovery. The report recommends continuing to focus on long-term reforms while balancing them with short-term measures aimed at preventing job losses and sustaining household incomes. In particular it calls for the implementation of comprehensive strategies for ‘active inclusion’ which combine and balance measures aimed at inclusive labour markets, access to quality services and adequate minimum income. It confirms the messages from the 2008 Joint Report <sup>(9)</sup> that evidence-based target-setting at national level, strengthened quality and continuity of stakeholder involvement and better mainstreaming of social considerations across policies can boost delivery.

*Social policies important to mitigate economic crisis*

The vital need to strengthen the positive mutual interaction between social and economic policies was highlighted in the same 2008 Joint Report and the European Commission’s Social Protection Committee’s 2009 work programme foresees further work on this issue.



### Box 7.1: Objectives related to 'Social inclusion, demography and migration' in the EU Sustainable Development Strategy

Overall objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

Operational objectives and targets

- Pursuing the EU objective that steps have to be taken to make a decisive impact on the reduction of the number of people at risk of poverty and social exclusion by 2010 with a special focus on the need to reduce child poverty.
- Ensuring a high level of social and territorial cohesion at EU level and in the Member States as well as respect for cultural diversity.
- Supporting the Member States in their efforts to modernise social protection in view of demographic changes.
- Significantly increasing the labour market participation of women and older workers according to set targets, as well as increasing employment of migrants by 2010.
- Continuing developing an EU migration policy, accompanied by policies to strengthen the integration of migrants and their families, taking into account also the economic dimension of migration.
- Reducing the negative effects of globalisation on workers and their families.
- Promoting increased employment of young people. Intensifying efforts to reduce early school leaving to 10 % and to ensure that at least 85 % of 22-year olds should have completed upper secondary education. By the end of 2007 every young person who has left school and is unemployed should be offered a job, apprenticeship, additional training or other employability measure within six months, and within no more than four months by 2010.
- Increasing the labour market participation of disabled persons.

## Potential linkages

### *Linkages within the social inclusion theme*

There are many links within the social inclusion chapter itself: Better education should allow more people to escape long-term unemployment by helping them succeed in the labour market. In turn, good education is sometimes a matter of (parental) income. Lower long-term unemployment, no gender pay gap and other factors enhancing labour market participation should reduce monetary poverty. Better education helps people to escape poverty. The more equal the income distribution, the less income poverty is expected, due to the relative measurement concept.

### *Linkages to socioeconomic development*

Social inclusion also links to the wider theme of socio-economic development as poverty and unemployment represent a non-realisation of human capital and thereby both a social and economic loss to society. Furthermore, a gender pay gap reduces work and education incentives for women, with negative effects on overall economic performance. Better educated persons have more potential to contribute to the economy. In turn, a well-performing economy and good performance on the labour market fosters employment, decreases monetary poverty and strengthens social inclusion. A strong economy also has more resources for social transfers to help people still experiencing poverty.

### *Linkages to other themes*

Links to themes other than socio-economic development include public health, demographic change, environment and global partnership. Poverty and unemployment affect people's health and are thus a challenge for the Welfare State. This may result in increased indebtedness and endangered public financial stability. People at risk of poverty have different consumption patterns with different environmental impacts and may be more affected by environmental degradation. Finally, a more socially inclusive society has more resources available for global partnership.

### Further reading

European Commission, *The social situation in the European Union 2007 – New Insights into Social Inclusion*, Luxembourg 2008.

Social Protection Committee of the European Commission, *Child Poverty and Well-being in the EU – Current status and way forward*, Brussels 2008.

Directorate-General for Employment, Social Affairs and Equal Opportunities of the European Commission, *Joint Report on Social Protection and Social Inclusion 2009*, Brussels 2009.

European Commission Communication, *A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training*, COM(2007) 61.

European Commission Communication, *Working together, working better: A new framework for the open coordination of social protection and inclusion policies in the European Union*, COM(2005) 706.

National Strategy Reports on Social Protection and Social Inclusion 2008-2010.





## Risk of poverty



In the EU-25 the risk of poverty did not change from 2005 to 2007. Single households, children, the elderly and people with lower education levels are at higher risk of poverty than the average

### Analysis

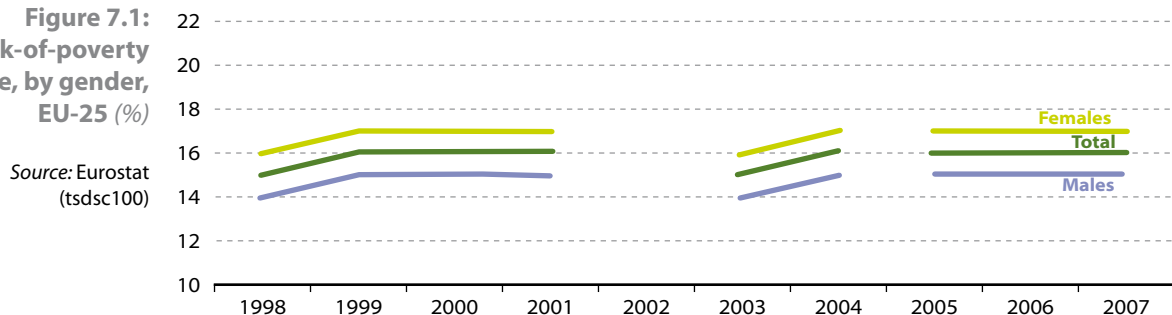
#### Women at a higher poverty risk than men

The risk of poverty for both women and men has not changed in the EU-25 since 2005 despite high GDP growth. In 2007, about one in six persons lived at risk of poverty. This proportion was higher for women than for men. Between 1998 and 2001, the poverty risk rate rose by one percentage point, whereas it remained constant between 2005 and 2007. However, data for periods before 2005 are not directly comparable since they have been obtained from different sources.

#### Increase in risk for single parents and single persons

Adults below the age of 25 and over 65 were at a higher risk of poverty than individuals aged between 25 and 64. The poverty risk of the 18-24 and 50-64 age groups has even increased between 2005 and 2007. Furthermore, persons in single households face a higher poverty risk than the population average, with the risk being highest for single parents. From 2005 to 2007, the poverty risk for single persons and single parents rose.

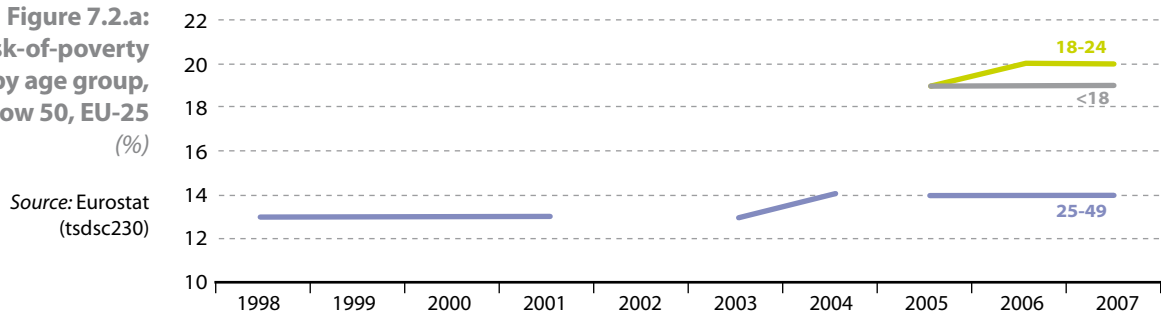
**Figure 7.1:**  
At-risk-of-poverty rate, by gender, EU-25 (%)



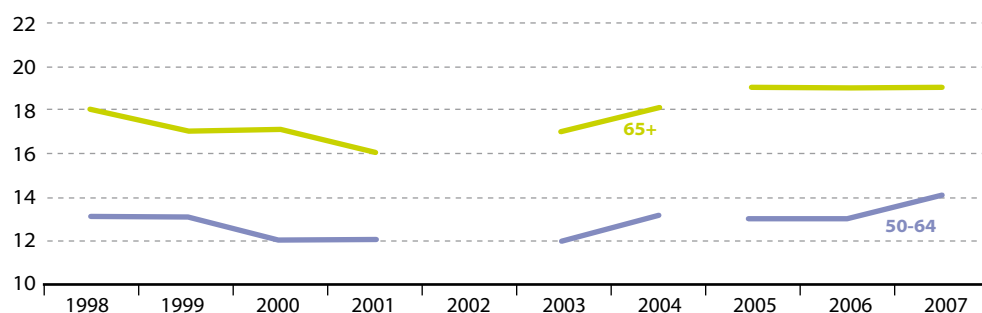
Source: Eurostat (tsdsc100)

NB: Data from 1998 to 2004 are Eurostat estimates; break in series in 2005.

**Figure 7.2.a:**  
At-risk-of-poverty rate, by age group, below 50, EU-25 (%)



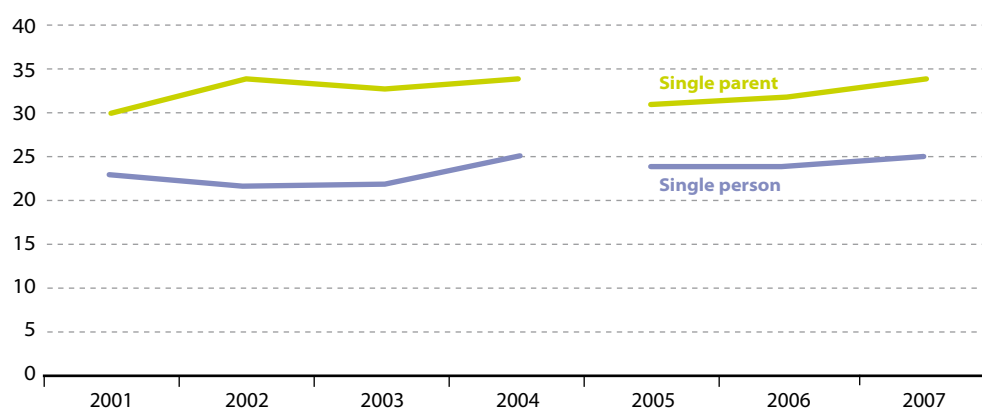
Source: Eurostat (tsdsc230)



**Figure 7.2.b:**  
At-risk-of-poverty rate, by age group, 50 and over, EU-25 (%)

Source: Eurostat (tsdsc230)

NB: Data from 1998 to 2004 are Eurostat estimates; break in series in 2005.



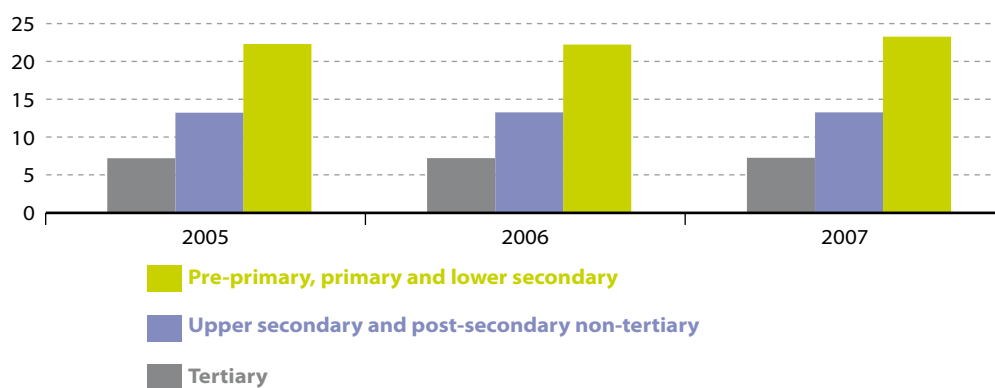
**Figure 7.3:**  
At-risk-of-poverty rate, by household type, EU-25 (%)

Source: Eurostat (tsdsc240)

NB: Break in series in 2005.

The risk of poverty showed a certain relationship to educational level. In 2007, while 23 % of the persons with at most lower secondary education were at risk of poverty, only 13 % of the people with upper secondary or post-secondary education and only 7 % of the people with tertiary education experienced that risk. From 2005 to 2007, the at-risk-of-poverty rate for people with lower levels of education slightly increased by one percentage point, while the risk of poverty for people with middle and higher levels of education did not change. Thus, education apparently had a growing impact on the poverty risk. It seems that the economic upswing created demand for labour, primarily for better qualified persons.

*Growing influence of education*



**Figure 7.4:**  
At-risk-of-poverty rate, by highest level of education attained, EU-25 (%)

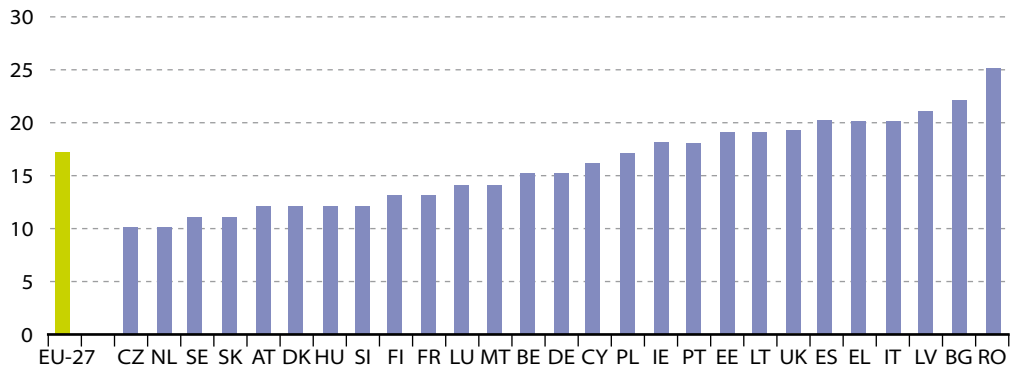
Source: Eurostat (tsdsc420)



Large variation in the at-poverty-risk rate can also be observed across countries. In 2007, the share of persons at risk of poverty ranged from 25 % to 10 %, resulting in 16 % for the EU-27 as a whole.

**Figure 7.5: At-risk-of-poverty rate, by country, 2007 (%)**

Source: Eurostat (tsdsc100)



### Indicator relevance

The Sustainable Development Strategy includes the objective that ‘steps have to be taken to make a decisive impact on the reduction of the proportion of people at risk of poverty and social exclusion by 2010 with a special focus on the need to reduce child poverty’. To improve the monitoring of social exclusion, qualitative and quantitative indicators were developed by the European Council in Lisbon (2000) and Laeken (2001). The at-risk-of-poverty rate belongs to the ‘Laeken portfolio’ of social inclusion indicators. In 2002, the European Council in Barcelona stressed the importance of the fight against poverty and social exclusion. The Member States were invited to set targets in their National Action Plans for significantly reducing the number of people at risk of poverty and social exclusion by 2010.

Measuring poverty is difficult since it is a multidimensional concept. As household income is generally considered to be one of the key factors which determine the standard of living enjoyed by households, the indicator is a meaningful measure of poverty and social exclusion. However, other relevant barriers to fully participating in society, such as access to the labour market, education, housing and healthcare, should be considered as well.

### Definition

The ‘at-risk-of-poverty rate’ is defined as the share of persons with an equivalised disposable income below 60 % of the national median income.

## Intensity of poverty

The gap between the poor's income and the poverty threshold in the EU-27 has widened between 2005 and 2007

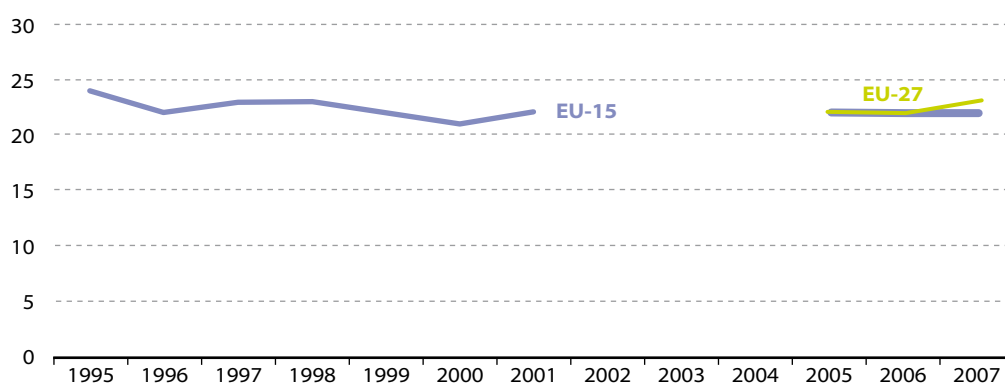


The indicator measures the monetary intensity of poverty, which is how much the income of poor persons is below the at-risk-of-poverty threshold. The EU-27 'relative at-risk-of-poverty gap' amounted to 23 % in 2007, which means that half of the poor had an income of less than 77 % of the poverty line. A deepening of the intensity was registered from 2005 to 2007.

Although there was no change for the EU-15 over the period 2005 to 2007, data available from 1995 to 2001 reveal a decrease from 24 to 22 % over those years.

### Analysis

*The income of poor persons is on average 23 % below the at-risk-of-poverty line*



**Figure 7.6:**  
Relative at-risk-of-poverty gap (%)

Source: Eurostat  
(tsdsc250)

NB: Eurostat estimates (except EU-15 2005-2007 and EU-27 2007); 2005-2006 same values for EU-27 and EU-15.

The relative median at-risk-of-poverty gap concentrates on the lower end of the income distribution. It illustrates how much income the persons at risk of poverty lack to escape from that risk. It thereby complements the picture provided by the at-risk-of-poverty rate. Narrowing the gap is a vital contribution to the key sustainable development objective of poverty alleviation.

### Indicator relevance

The relative median at-risk-of-poverty gap is calculated as the difference between the median equivalised total net income of persons below the at-risk-of-poverty threshold and the at-risk-of-poverty threshold, expressed as a percentage of the at-risk-of-poverty threshold (cut-off point: 60 % of median equivalised income). In line with decisions of the European Council, the risk-of-poverty rate is measured relative to the situation in each country rather than applying a common threshold to all countries.

### Definition



## Income inequalities



Income inequality increased from 2005 to 2007 in the EU-27

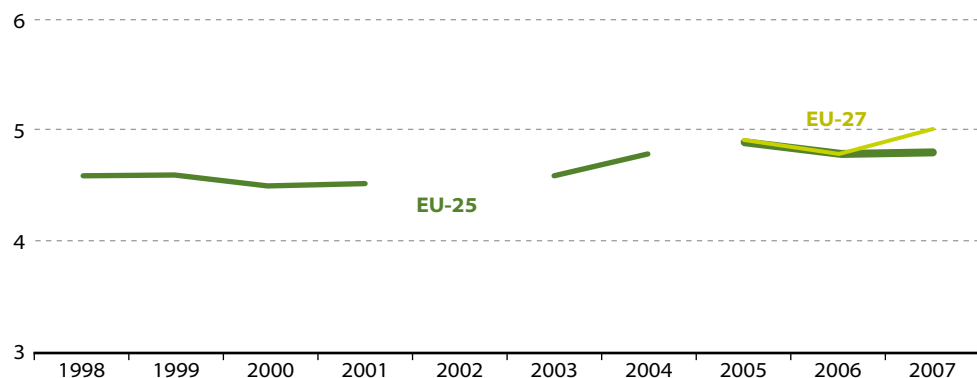
### Analysis

*The top quintile disposed of an income five times higher than the lowest quintile*

Income inequality is measured here as the ratio between the total income of the richest 20 % of the population of a country to the total income of the poorest 20 %. In 2007, the top quintile of EU-27 had an income five times higher than the lowest quintile. Two years before this factor had been at 4.9. According to earlier data available for the EU-25, which are not fully comparable as they have been collected from different sources, the indicator continuously decreased from 1998 to 2001 and considerably increased between 2003 and 2004.

**Figure 7.7:**  
Inequality of income distribution (income quintile share ratio)

Source: Eurostat (tsdsc260)



NB: Eurostat estimates (except EU-25 2005-2007 and EU-27 2007); break in series in 2005; 2005-2006 same values for EU-27 and EU-25.

### Indicator relevance

A high level of social cohesion is a goal of the Sustainable Development Strategy and reducing inequalities contributes to this objective. Reducing income inequality helps diminish marginalisation of the most vulnerable and may also contribute to less accentuated social tensions due to inequality. The quintile ratio focuses on the measurement of the distance between the poorest and richest strata of society. It does not measure inequalities that occur in the middle segment or within the poorest or richest income segments, in contrast, for instance, to the Gini coefficient<sup>(10)</sup>. Both indicators belong to the 'Laeken portfolio' of social inclusion indicators.

### Definition

The income inequality indicator (income quintile share ratio) is defined as the ratio of total income received by the 20 % of the population with the highest income (top quintile) to that received by the 20 % of the population with the lowest income (lowest quintile).

## Jobless households

The share of adults in jobless households in the EU-27 has considerably decreased since 2000. In 2007, one in ten persons, adults and children alike, lived in a jobless household



The indicator measures the share of persons living in households in which none of its members is in paid work <sup>(1)</sup>. In 2007, about one in ten adults (9.3 %) and one in ten children (9.4 %) lived in a jobless household. Both shares modestly grew from 2000 to 2003 and declined from 2003 to 2007, which indicates that the proportion of persons in jobless households is, like unemployment (see the chapter on socio-economic development), shaped by economic growth and investment. Up to 2005, children showed a modestly smaller likelihood than adults to live in a jobless household, but this difference has disappeared since 2006.

Overall, between 2000 and 2007, the share of adult persons living in jobless households decreased by 1.3 % per year, the share of children in jobless households by a smaller amount of annually 0.6 %. As these two years mark peaks in the economic cycle, this development suggests that the share of persons in jobless households which is not following the economic cycle has become smaller.

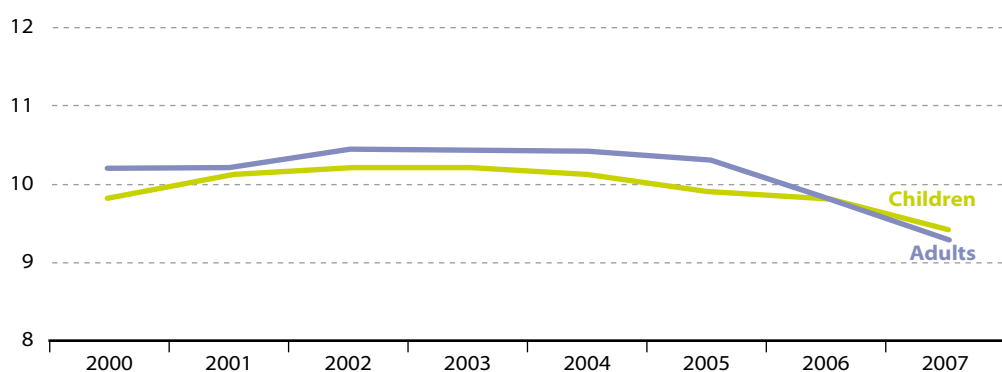


Figure 7.8: People living in jobless households, by age group, EU-27 (%)

Source: Eurostat (tsdsc310)

NB: Eurostat estimates.

The well-being of the whole household is put at risk when no one in the household is employed. Therefore, persons in jobless households experience a particularly high risk of poverty. Besides being dependent on social benefits, living in a jobless household further reduces contact with the labour market and also hampers access to culture, sport and leisure. Children who grow up in jobless households are at risk of experiencing unemployment later in their life, *inter alia*, because there is no adult to act as a role model to introduce them to a 'culture of work'.

### Indicator relevance

The indicator is calculated as the number of persons in the respective age groups living in households where none of the members are working, expressed as the percentage of the total population in the respective age groups. Households solely composed of students aged 18-24 are not considered. The age groups considered are 0-17 years for children and 18-59 years for adults.

### Definition



## Working poor



The share of employed persons, who are at risk of poverty despite their work, remained stable at 8 % between 2005 and 2007 in the EU-25

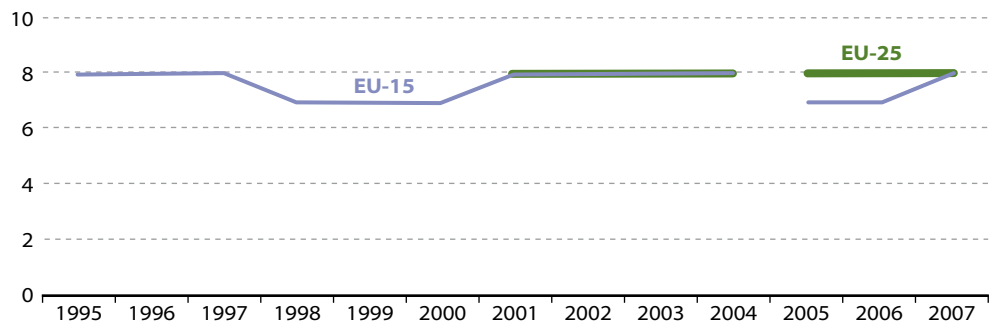
### Analysis

#### Importance of work for avoiding poverty unchanged

In 2007, 8 % of employed persons in the EU-25 lived in households with insufficient disposable income to lift them out of the risk of poverty ('working poor'). Comparison with the overall at-risk-of-poverty rate (see above) suggests that employment reduces the likelihood of being at risk of poverty by a half. The in-work at-risk-of-poverty rate has remained constant since 2005<sup>(12)</sup>. Earlier data for the EU-15, which have been calculated differently and therefore cannot be directly compared, reveal that between 1995 and 2001 the rate overall had been the same denoting a temporary decrease of one percentage point in the years 1998 to 2000.

Figure 7.9: In work at-risk-of-poverty rate after social transfer (% of working population)

Source: Eurostat (tsdsc320)



NB: EU-15 1995-2000 are Eurostat estimates; break in series in 2005.

### Indicator relevance

The in work at-risk-of-poverty rate indicates to what extent being in work helps to overcome the risk of poverty. The 'working poor' represent a subgroup of those being at risk of poverty in general. Reducing the poverty risk of employed persons may require different policies than reducing the number of people at risk of poverty in general. This represents a further reason why the in-work risk of poverty is monitored separately from the risk of poverty of the total population.

### Definition

The indicator is defined as the share of persons in work with a disposable household income after social transfers below the risk-of-poverty threshold on the total working population. The risk-of-poverty threshold is set at 60 % of the national median.



## Long-term unemployment

**Between 2000 and 2008, long-term unemployment substantially decreased for the active population in EU-27 from 4 % to 2.6 %**



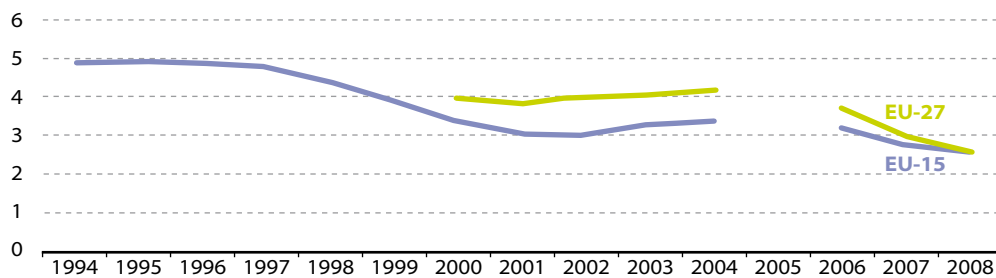
In 2008, 2.6 % of the economically active population were unemployed for longer than a year. Between 2000 and 2008, the long-term unemployment rate in the EU-27 decreased annually on average by more than 5 %. This decrease, however, was not continuous. Instead, the long-term unemployment rate, as well as the general unemployment rate (see the chapter on socio-economic development), showed a rise between 2001 and 2004 in response to a slowdown of economic growth.

Comparing the amounts in 2001 and 2008, both of which represent minimum levels reached in an economic cycle, suggests that the level of the long-term unemployment rate not affected by fluctuations in economic growth decreased by 1.3 percentage points from 3.9 % to 2.6 %. In 2008, the long-term unemployment rate varied considerably across Member States, ranging from 6.6 % to 0.5 %.

### Analysis

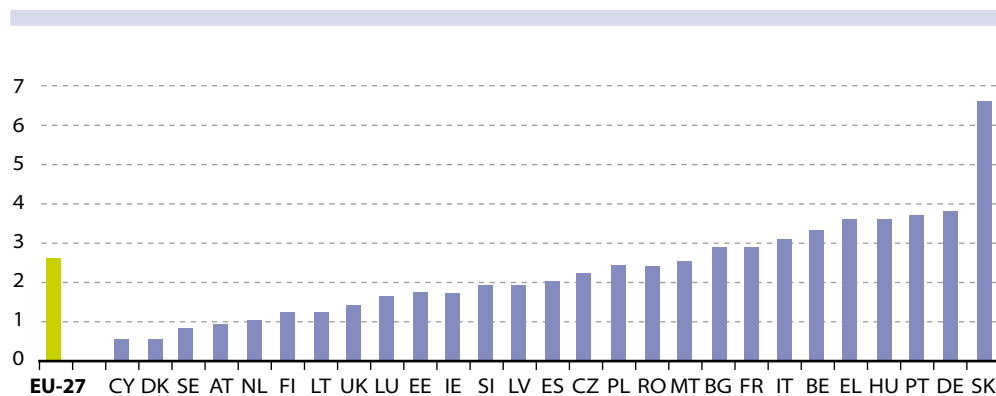
*Long-term unemployment went up in the economic downturn*

*Indication for structural reduction of long-term unemployment*



**Figure 7.10:** Total long-term unemployment rate (% of active population)

Source: Eurostat (tsdsc330)



**Figure 7.11:** Total long-term unemployment rate, by country, 2008 (% of active population)

Source: Eurostat (tsdsc330)

Long-term unemployed persons have more difficulties to become employed than those who are unemployed for shorter periods. They also face a particularly high risk of social exclusion. Thus, long-term unemployment is monitored separately. It is important to note that long-term unemployment could sometimes be higher when taking into account persons participating in alternative benefit schemes or labour market programmes.

### Indicator relevance

The rate of long-term unemployment is calculated as long-term (12 months and longer) unemployed persons aged 15-64 as a share of the total active population of the same age group.

### Definition



## Gender pay gap

Between 2006 and 2007 the gap between women's and men's earnings stayed the same. The levels and trends vary considerably between Member States

### Analysis

In 2006 and 2007, the gross hourly earnings of employed women were on average 18 % lower than those of men. This relative difference, which represents the (unadjusted) gender pay gap, had decreased marginally from 17.7 to 17.5 %.

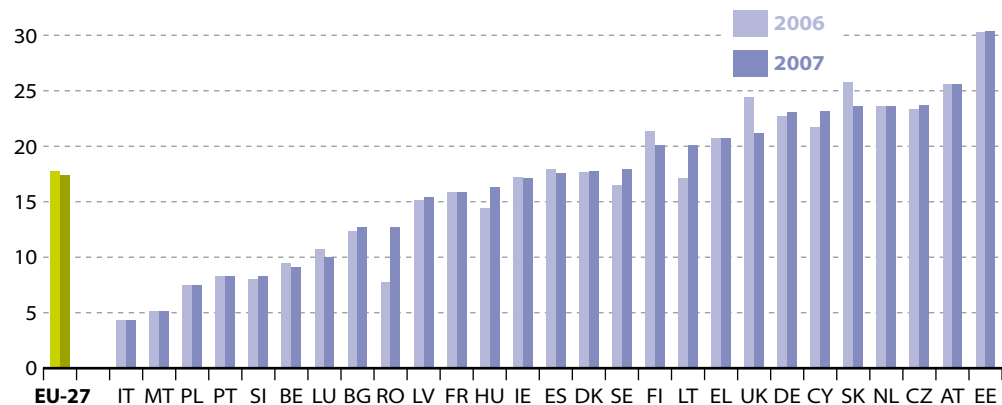
### Gender pay gap stagnates

At the level of Member States, values ranged from 4 % to 30 % in 2007. Whilst in eight countries the gap has narrowed, it has stagnated in another eight and in the remaining eleven Member States it has widened. A clear geographical pattern cannot be identified. Structural factors which may influence the gender pay gap include wage bargaining structures, the supply of affordable childcare, differences between men and women in education, job experience, the sectoral distribution of employment and the degree of wage inequality in general.

### Large variation across countries

**Figure 7.12:**  
Unadjusted gender pay gap, by country (%)

Source: Eurostat (tsdsc340)



NB: 2007 EU-27, EE, EL, ES, IT and MT provisional values.

### Indicator relevance

The gender pay gap represents one aspect of gender inequality. Gender equality has been an EU goal since the Nice Treaty. Since fairer wages will provide additional working incentives for women, closing the gender pay gap is also related to increasing labour market participation of women, another operational objective of the Sustainable Development Strategy. It is stated there that the Member States and the EU will implement the European Pact for Gender Equality agreed at the European Council in 2006.

### Definition

The 'gender pay gap in unadjusted form' is the difference between average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees. All employees working in firms with 10 and more employees are taken into account for this indicator.

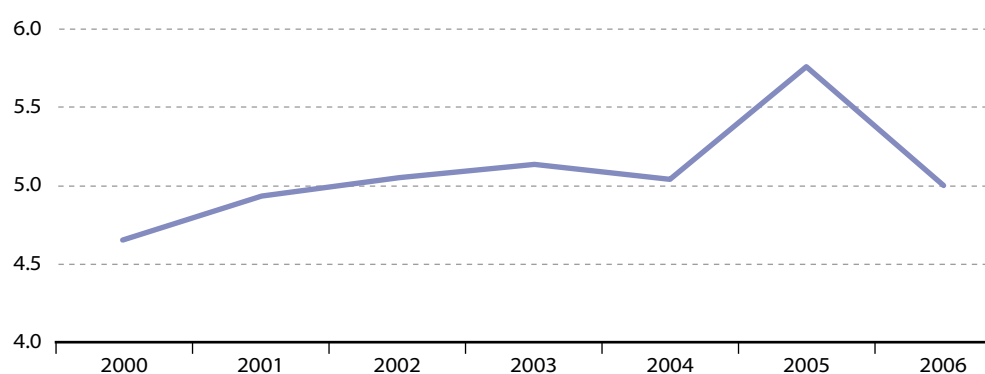
## Public expenditure on education

Between 2000 and 2006, the share of public expenditure on education in GDP increased with a sharp peak observable in 2005

In 2006, 5.0 % of GDP was spent on education. There was a steady increase from 4.7 % to 5.1 % between 2000 and 2003, a period in which the growth of GDP slowed down. Since then, the share of public expenditure on education in GDP has remained almost unchanged, except for a short-lived peak in 2005, in which it climbed to 5.8 %. In 2006 the indicator fell back to its previous level of around 5 %.

### Analysis

*Short-lived peak in 2005*



**Figure 7.13: Public expenditure on education, EU-27 (% of GDP)**

Source: Eurostat (tsdsc510)

NB: Eurostat estimates.

In the Sustainable Development Strategy education and knowledge are considered as cross-cutting policies contributing to a 'knowledge society'. Education is seen as a prerequisite for enabling citizens to enjoy a high quality of life. It can also contribute to greater social cohesion and economic prosperity namely by increasing labour productivity. However, it is difficult to identify a clear relationship between public expenditure on education and the quality of education provided in a particular country.

### Indicator relevance

The indicator is defined as the total public expenditure on education, expressed as a percentage of GDP. Education expenditures cover current and capital expenses for educational institutions, support to students and families and subsidies for educational activities to private households and firms.

### Definition



## Early school leavers



The decline from 2000 to 2007 in the share of early school leavers in EU-27 was too slow to be on the target path. In 2007, 15 % of young people left school before having completed lower secondary education

### Analysis

#### Stronger decrease necessary to reach target

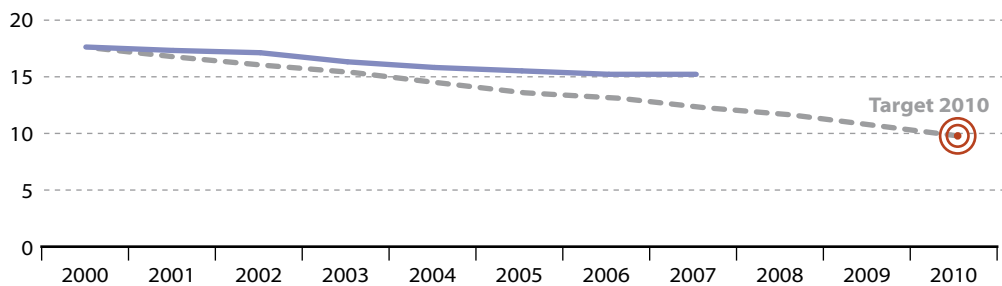
In 2007, 15 % of those aged between 18 and 24 years old had not completed lower secondary education and were not in further training. Since 2000, the share of these ‘early school leavers’ decreased steadily until 2006. However, no progress was made between 2006 and 2007. As a result, the decrease achieved since 2000 in the EU-27 accounted for only half of the change that would have been necessary to keep on a linear track towards the target of 10 % set for 2010. Compared to the linear target path, the current level should have been reached in 2003; in other words in 2007 the indicator was running four years behind (linear) schedule.

#### Six countries have achieved the target

At the national level, the share of early school leavers varies from 4 % to 37 %. Six countries have already achieved the 2010 target.

**Figure 7.14:**  
Early school leavers, EU-27 (%)

Source: Eurostat (tsdsc410)



### Indicator relevance

The EU SDS calls for intensified efforts to reduce the proportion of early school leavers to 10 %. Young adults who lack a basic level of education are much more likely to be out of employment or working in low-wage jobs, and they are less likely to progress in their career. A basic level of education may allow people to adapt to a changing labour market. This indicator is one of three core indicators used to measure progress towards the Lisbon objectives in the field of education and training.

### Definition

The indicator is defined as the percentage of the population aged 18-24 with at most lower secondary education (ISCED levels 0, 1, 2 or 3c short) and not in further education or training during the last four weeks.

## Adults with low educational attainment

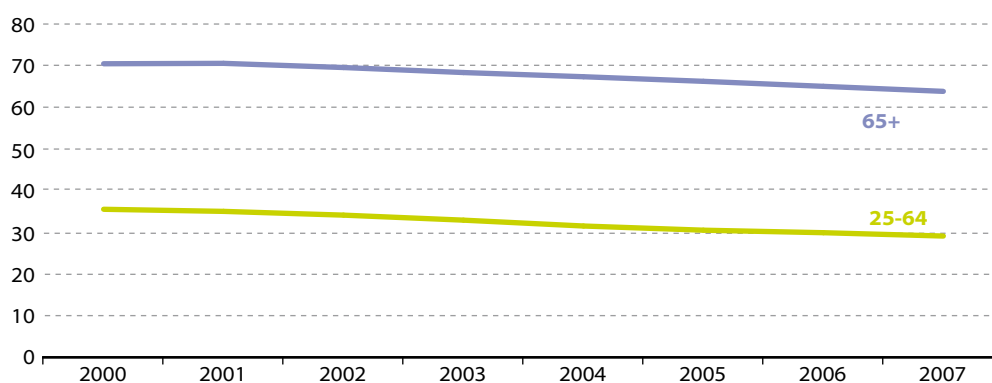
In the EU-27 the share of persons with at most lower secondary education among adults of working age steadily and substantially declined between 2000 and 2007



The indicator measures the prevalence of low educational attainment among different age groups. Among the 25 to 64 year old age group, 36 % had at most lower secondary education in 2000; seven years later their share had declined to 29 %. The respective shares for persons aged 65 and over were higher and amounted to 64 % in 2007. In both age groups the percentages have steadily fallen. Among 25 to 64 year olds, at an annual pace of 2.8 % on average, and for the over-65s at the slower rate of 1.7 %.

### Analysis

*Considerable reduction in all age groups, but highest overall prevalence for over-65s*



**Figure 7.15:** Persons with low educational attainment, by age group, EU-27 (%)

Source: Eurostat (tsdsc430)

In the Sustainable Development Strategy, education and training are among the ‘cross cutting policies contributing to the knowledge society’. Low educational attainment is considered as a barrier to both personal and professional development and is also an impediment to society’s ambition of reducing the disparities and inequities between individuals or groups. Individuals with low levels of education are more likely to be out of work or in low-quality employment.

### Indicator relevance

The indicator is the percentage of the population having reached an ISCED education level of at most 3c short (lower secondary education or less than 2 years of upper secondary education).

### Definition



## Lifelong learning



In the EU-27, the participation in lifelong learning did not grow sufficiently between 2003 and 2008 to follow the target path. The 2010 target of 12.5 % may thus not be reached

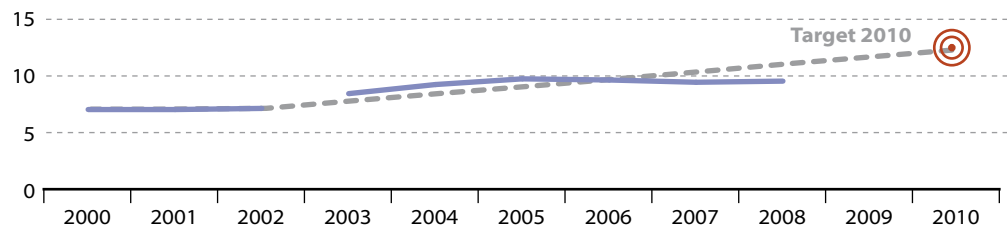
### Analysis

#### No progress since 2005

The participation of adult working age people in education and training in the EU-27 has been increasing since 2003. It reached a peak of 9.8 % in 2005. Between 2005 and 2008, however, participation has slightly decreased to 9.6 %. This decline may be due to the economic upswing during this period, making entry in the labour market more attractive at the expense of training programme participation. The 2010 target of 12.5 % may not be reached if the recent evolution continues.

**Figure 7.16:**  
Lifelong learning,  
EU-27 (%)

Source: Eurostat  
(tsdsc440)



NB: 2000-2001 Eurostat estimates; 2008 provisional value; break in series in 2003.

### Indicator relevance

In the context of the Sustainable Development Strategy, the European Parliament and the Council adopted an integrated action programme in the field of lifelong learning for the period 2007-2013 in 2006. The aim of the programme is to contribute to sustainable development through lifelong learning, by helping to develop an advanced 'knowledge society'. Lifelong learning is essential for an ageing population that needs to adopt new technologies for sustainable development. In 2002, the Barcelona Council stated that by 2010 the European Union should be the world leader in education quality, and set the objective that participation in lifelong learning should reach 12.5 % of the adult working age population in 2010.

### Definition

The indicator is defined as the percentage of the population aged 25 to 64 participating in education and training in the last four weeks.

## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Indicators based on the at-risk-of-poverty rate (Poverty risk, intensity of poverty, working poor)

Data for the risk of poverty before and after 2005 are only comparable to a limited extent. Until 2001 data were provided by the European Community Household Panel (ECHP). 2003-2004 was a transitional period in which the European Community statistics on income and living conditions (EU-SILC) surveys were established in a limited number of countries. These surveys were complemented by national sources which were harmonised ex-post. From 2005 all EU-25 countries, plus Norway, provided data through the EU-SILC. Bulgaria, Romania, Croatia, Turkey and Switzerland launched SILC in 2006. The population consists of all persons living in private households. The term 'person' therefore includes all members of the households, whether adults or children. Persons living in collective households, homeless persons or other difficult to reach groups are not covered. The EU aggregate is a population-weighted average of individual national figures.

In line with the European Council decision, the risk-of-poverty rate is measured relative to the situation in each country rather than applying a common threshold to all countries.

'Equivalentised income' involves adjusting household income to take into account economies of scale within a household. It is calculated by adding together the income received by all the members of the household, divided by the equivalentised household size, where members of a household are weighted differently according to age. The modified OECD equivalence scale which is used assigns a weight of 1 to the first adult in a household, 0.5 to other household members over 14 and 0.3 to children under 14.

For information on education level see 'Early school leavers and low educational attainment' below.

### Income inequalities

The data stem from the ECHP and the EU-SILC (see above). The 80/20 income quintile share ratio is a measure of income distribution based on quintiles of income distribution, ranking individual income into five income groups of equal size, each containing 20 % of the total population living in one country. Firstly, individuals are sorted according to their 'equivalised disposable income' (sorting order: lowest to highest value). The individuals at the lower end of the distribution that represent 20 % of persons are defined as 'poorest' (first quintile); those at the upper end of the distribution that represent 20 % of persons are defined as 'richest' (fifth quintile). The population consists of all persons living in private households of a country. To make income levels comparable, the concept of 'equivalised' disposable income is used (see above). The EU aggregate is a population-weighted average of individual national figures.

### Jobless households and long-term unemployment

The data are derived from the quarterly EU Labour Force Survey (LFS) which is the main source of internationally comparable EU labour market statistics. The indicator 'total long-term unemployment rate' is based on annual averages of the quarterly data (missing quarters are estimated by Eurostat). The EU aggregate is derived from total populations obtained at national level. For more information on the LFS see the methodological notes on 'Employment and unemployment' in the chapter 'Socioeconomic development'.

For 'jobless households', EU aggregates are provided: up to 2000, on the basis of the available country data; from 2001, using the closest available year result in case of missing country data (excluding Sweden).

### Gender pay gap

The indicator is based on several data sources, including the ECHP, EU-SILC and national sources (see section on poverty above).

Administrative data are used for Luxembourg and the LFS is used for France (up to 2002) and Malta. For 2005, EU-SILC data are used for the EU-25. From 2003 to 2004, EU-SILC data have been used for some countries. For 2002 and before, ECHP data have been used for some countries. All other sources are national surveys except for a few special cases.

EU-27 and EU-15 estimates are population-weighted averages of the latest available national data, adjusted, where possible, to take into account a change in the data source. Countries without any previous gender pay gap data for a specific year are excluded from the EU-27 and EU-15 estimates. Where data have been provided by the national statistical offices based on national sources, the indicators for these countries cannot be considered to be fully comparable.

### Public expenditure on education

The main source of data is the joint UNESCO-UIS/OECD/Eurostat (UOE) questionnaires on education statistics, which constitute the core database on education.

The statistics refer to education in the ordinary school and university system, as defined in the international standard classification of education (ISCED). The education systems differ between countries. The ISCED classification makes it possible to compare educational levels in spite of these differences, but the differences may nevertheless affect certain figures.

The EU figures up to 2002 are Eurostat estimates; there is no figure for 1998.

### Early school leavers and low educational attainment

The data are derived from the EU Labour Force Survey (LFS).

Education levels are coded according to the international standard classification of education (ISCED, 1997) introduced by the UNESCO: pre-primary, primary and lower





secondary education: levels 0-2; upper secondary and post-secondary non-tertiary education: levels 3-4; tertiary education: levels 5-6.

The information collected relates to all education or training whether or not relevant to the respondent's current or possible future job. It includes initial education, further education, continuing or further training, training within the company, apprenticeship, on-the-job training, seminars, distance learning, evening classes, etc. It also includes courses followed for general interest and may cover all forms of education and training such as language, data processing, management, art/culture, and health/medicine courses.

Due to the implementation of harmonised concepts and definitions in the survey, educational indicators (mainly on early school leavers) lack comparability with former years in several countries and consequently for the EU-27 aggregate. In Denmark, Luxembourg, Estonia, Latvia, Lithuania, Cyprus, Malta and Slovenia, the high degree of variation of results over time is partly influenced by a low sample size.

#### Lifelong learning

Education and lifelong learning data are taken from the LFS and relate to all education or training whether or not relevant to the respondent's current or possible future job.

Lifelong learning refers to persons aged 25 to 64 who stated that they received education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding those who provided no answer to the question on 'participation to education and training'.

From 27 October 2006, this indicator is based on annual averages of quarterly data instead of one unique reference quarter in spring. This improves both the accuracy and reliability of the indicator thanks to a better coverage of all weeks of the year and an increased sample size. The 1999, 2000 and 2001 EU figures are estimated values. The 2003 values contain a break in series compared with figures from previous years. From 2003, due to the implementation of a continuous survey (i.e. survey covering all weeks of the reference quarter), data refer to weeks 14 to 26 (quarter 2) except for a few special cases.

Until 2002, the reference period was as follows:

- one to three single weeks in April-June for DE, IT, LU and IS,
- 4 to 13 weeks in the first quarter in FR and AT,
- 13 weeks that correspond to the season spring in UK and IE,
- 13 weeks from April to June in the rest of the countries.



## Chapter notes

- <sup>(1)</sup> Laeken Council, *Meeting of the EU Heads of State and Government in Laeken*, December 2001
- <sup>(2)</sup> Gothenburg Council, *Meeting of the EU Heads of State and Government in Gothenburg*, June 2001
- <sup>(3)</sup> Laeken Council, *op. cit.*
- <sup>(4)</sup> European Commission Communication, *Working together, working better - A new framework for the open coordination of social protection and inclusion policies in the European Union*, COM(2005) 706.
- <sup>(5)</sup> The Lisbon Council 2000 adopted the Lisbon Strategy, a development plan for the EU. Its objectives are by 2010 to make the EU the most dynamic knowledge-based economy in the world and to foster sustainable economic growth with greater social cohesion and respect for the environment.
- <sup>(6)</sup> The open method of coordination (OMC) is an instrument of the Lisbon Strategy. It is a framework for cooperation between the Member States, whose national policies can thus be directed towards certain common objectives. It aims at exchanging best practice and stimulate mutual learning and at coordinating national policies where the EU itself does not have principal policy-making competencies. The OMC consists of four key elements:
- Fixing guidelines for the EU combined with specific timetables for achieving the goals in the short, medium and long terms;
  - Translating these European guidelines into national and regional policies by setting specific targets and adopting measures;
  - Establishing quantitative and qualitative indicators as a means of comparing best practice;
  - Periodic monitoring, evaluation and peer review organised as mutual learning processes.
- <sup>(7)</sup> European Commission, *Portfolio of overarching indicators and streamlined social inclusion, pensions, and health portfolios*, Brussels 2006.
- <sup>(8)</sup> European Commission, *Joint Report on Social Protection and Social Inclusion 2009*, Brussels 2009.
- <sup>(9)</sup> European Commission, *Joint Report on Social Protection and Social Inclusion 2008*, Brussels 2009.
- <sup>(10)</sup> The Gini index measures inequality in terms of individual (per capita), net-monetary income distribution (after taxes and social security transfers). It varies from 0 (no inequality) to 1 (total inequality, which would mean that only one person has all income).
- <sup>(11)</sup> The analysis is based on the indicator for adults (persons aged 18 to 59 years) only.
- <sup>(12)</sup> As the numbers are only available to the nearest integer and as their sampling error is not reported, the indicator is faced with considerable uncertainty.













# Demographic changes

*'To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being'*

## Overview of main changes

The demographic changes observable in the European Union since 2000 show rather favourable developments as regards employment of older workers as well as for some of the indicators related to population size and age distribution. Changes are less favourable, or even unfavourable, for indicators monitoring the sustainability of public finances and the adequacy of income for older people, in particular for the aggregate replacement ratio, that is, the level of income of pensioners relative to their income before retirement, which fell below 50 % in 2007.

**Table 8.1: Evaluation of changes in the demographic changes theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
 Employment rate of older workers	<b>Demography</b>	
	 Life expectancy at age 65 (men's)*	 Fertility rate*
	 Life expectancy at age 65 (women's)*	: Migration : Elderly population compared to working-age population
	<b>Old-age income adequacy</b>	
	 Income level of over-65s compared to before**	 Risk of poverty for over-65s***
	<b>Public finance sustainability</b>	
	 Public debt	 Retirement age**** : Expenditure on care for the elderly : The impact of ageing on public expenditure


\* From 2002


\*\* From 2002


\*\*\* From 2005


\*\*\*\* From 2001

### LEGEND:

 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



### Headline indicator

*The target of at least half of older workers in employment by 2010 might possibly be achieved*

Changes in the employment rate of older workers in the EU-27 over the period 2000 to 2008 reflect some progress towards the target that at least half of older workers should be in employment by 2010. This positive path indicates improvements in the participation of older people in the labour market, one of the objectives called for by the Sustainable Development Strategy (EU SDS), as well as a reduction in demand for expenditure on pensions.

### Demography

*The proportion of the older population will continue to rise*

Data on the life expectancy at age 65 suggest that the length of life of men and women will continue to rise, leading to a growing older population, particularly in the very old group (80+). In addition, although there has been favourable progress on population renewal, fertility rates remain under the population replacement level implying that the size of the working age population will continue to shrink.

*Old-age dependency ratios are projected to increase in following years*

Immigration into the EU outweighs emigration but has decreased over the period 2002 to 2008. The ratio of elderly people to the working age population rose and is projected to further increase. The indicator has gone up from 20 people aged 65 years or older per 100 persons of working age in 1990 to 25 in 2007, and it is estimated that it will rise to more than 50 by 2060. Rising old-age dependency ratios, combined with low average retirement ages, are key demographic factors generating strain on public finances.

### Old-age income adequacy

*Indicators on quality of life and adequacy of pensions show no progress in recent years*

Indicators related to quality of life and adequacy of pensions for the elderly show a rather negative development in recent years. The income level of over-65s compared to their previous income shows unfavourable progress between 2005 and 2007. Further, data by country indicate no significant change in the level of income of older people in most Member States between 2005 and 2007. Strikingly, the positive decline of risk of poverty for over-65s in EU-15 in the 1990s reverted to an increase in the first seven years of this century.

### Public finance sustainability

*Previous progress on public finances sustainability is likely to be affected by the current financial crisis*

The positive progress towards the 60 % euro-zone reference level reflected in public debt over the period 2000 to 2007 shifted in 2008, possibly as a consequence of recent financial turmoil. In addition, two trends are likely to jeopardise progress on public finance sustainability over the period 2000 to 2007. First, despite the increase in the employment of older workers discussed above, the small increase in the exit age from the labour market indicates that the target of delaying the average age of retirement to 65 years by 2010 set in the Barcelona European Council in 2002 is far from being achieved. Second, expenditure on care for the elderly as a percentage of GDP steadily rose between 2000 and 2004. This indicator, however, decreased slightly between 2004 and 2006, resulting in lower pressure on public finances.

Pressures on public finances in the EU result from both ageing populations and the structure of social protection systems. The impact of ageing on public expenditure is estimated by projected changes in public pensions expenditure and changes in projected theoretical income replacement ratio, which indicate the likely change in expenditure on and adequacy of pensions. The latest projections show that although pensions expenditure will increase between 2007 and 2060, the increase is projected to happen at the expense of a decline in the level of income of the older people (measured by theoretical income replacement ratio) in the majority of Member States.



## Background

The Sustainable Development Strategy (EU SDS) identifies 'social inclusion, demography and migration' as one of the EU's key economic and social challenges. The strategy sets out the objective of 'creating a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being'. It outlines targets and actions required to tackle the challenges that demographic changes and pension systems pose for the sustainable development of the region.

Demographic changes in the European Union have led to rising concerns over the sustainability and adequacy of social protection for future generations. The shape of the population pyramid has gradually shifted towards a mushroom-shaped age distribution. This population pyramid – in the context of early retirement schemes implemented since the 1970s and the post-war boom generation reaching retirement age – represents a risk for public finances, particularly when pension systems are supported by working tax payers. The current demographic context of a potentially shrinking working age population and growing retired population implies that Member States will face financial pressures to guarantee adequate pensions and social protection for the elderly.

Concerns over the risks that demographic changes pose to sustainable development in the European Union are reflected in several important policy initiatives of the current decade. Several European Councils, from Lisbon to Brussels, have stressed the importance of addressing the challenges that ageing populations pose if the region is to secure sustainability of public finances. The matter was first raised at Lisbon in 2000, and subsequent European Councils in Stockholm in 2001 and Barcelona in 2002 set concrete targets for increasing employment rates among older workers, improving health care for the elderly and promoting longer working lives. All these targets are to be achieved by 2010. More recently, initiatives such as the Working Group on Ageing Populations, the European Employment Strategy and the renewed Lisbon Strategy for growth and jobs have been established to respond to ageing population challenges for economic growth and fiscal sustainability.

Migration is a driver of demographic changes in the European Union that has gained relevance over recent years. When immigration surpasses emigration, it can constitute an additional source of labour for the region that could offset gaps generated by the decline in population of working age. The EU SDS recognises the contribution of net migration to the European Union workforce, while also acknowledging the efforts required to guarantee access to the labour market, integrate migrants and their families and reinforce the European Union migration policies governing asylum and admission procedures.

*The current EU demographic context poses severe challenges for the sustainability of public finances*

*Financial pressures are a consequence of early retirement schemes, the structure of social protection and a rise in life expectancy*

*Concerns over the adequacy of social protection for future generations have driven several policy initiatives*

*Migration is a driver of demographic changes in the EU that has gained relevance over recent years*

## Potential linkages

There are significant synergies within the sub-themes of demographic changes. Demography indicators reflect future age distribution of the population, which reflects imbalances between the elderly and population of working age. These imbalances determine the demand on public expenditure to meet specific needs, particularly in early retirement and tax-payer-funded pension systems.

Population growth affects the size of the labour force and is, therefore, important for economic growth. The progress of the fertility rate in recent years could represent a positive signal for the future supply of the workforce in the EU. Further, achieving the target of half of older popula-

*Linkages within demographic changes*

*Linkages with socioeconomic development*



tion in employment by 2010 will contribute to the final objectives of sustainable development (see 'socioeconomic development' chapter in this report).

**Linkages with public health**

Improvements in the health of the population aged over 65 are linked to expenditure on care for the elderly. The increase in public expenditure on care for the elderly over the period 2000 to 2006 shows rising public resources available to promote good public care on equal conditions, which could contribute to improve the health status of the older population.

**Linkages with social inclusion**

The risk of poverty for the elderly is one of the components of the total population at risk of poverty, included in the social inclusion theme. The unfavourable progress on the elderly at risk of poverty and the income level of pensioners between 2005 and 2007 could have an impact on the total population at risk of poverty and the intensity of poverty risk.

**Further reading**

Beetsma, R. and Oksanen, H., 'Pension systems, ageing and the stability and growth pact', *European Economy, Economic papers*, No 289, 2007

European Commission and the Economic Policy Committee (AWG), '2009 ageing report: Underlying assumptions and projection methodologies', *European Economy*, No 7, 2008

European Commission and the Economic Policy Committee (AWG), '2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060)', *European Economy*, No 2, 2009

European Commission, *Demography report 2008: Meeting social needs in an ageing society*, Luxembourg, Office for Official Publications of the European Union, 2009

European Commission, *Joint report on social protection and social inclusion 2009*, Luxembourg, Office for Official Publications of the European Union, 2009





## Employment rate of older workers

From 2000 to 2008 the increase in the proportion of 55-64 year olds in employment followed the EU-27 target path with a small but persistent gap

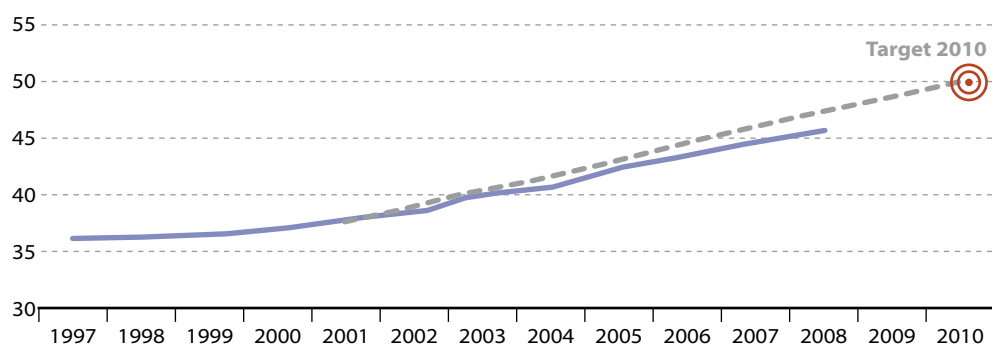


The proportion of people aged 55 to 64 in employment in the EU-27 has risen from 36.9 % to 45.6 % over the period 2000 to 2008. It is possible that the 50 % target for 2010 will be achieved.

There are significant differences between countries. 12 have already achieved the 50 % employment of older workers target. The differences between countries are partly due to different retirement ages but also to extensive structural labour market and pension reforms that took place in some Member States during the past decade, such as reducing access to early retirement schemes, strengthening incentives to work longer and improving the employability of older workers <sup>(1)</sup>.

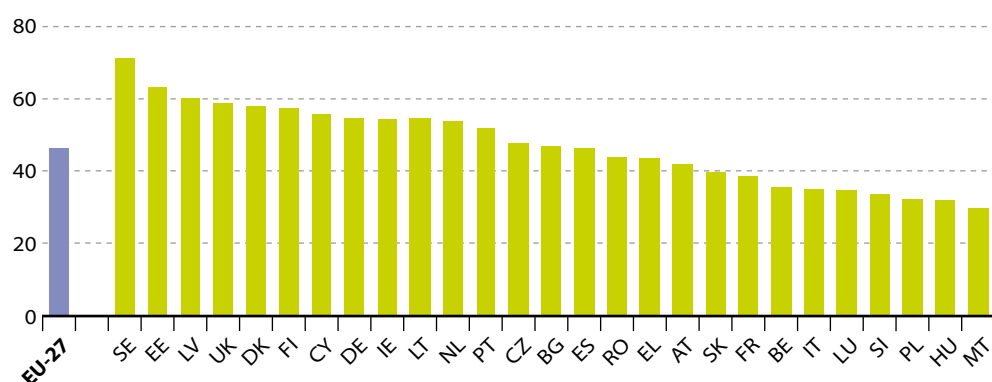
### Analysis

*12 out of 27 countries have already achieved the 50 % employment target*



**Figure 8.1:** Employment rate of older workers, EU-27 (%)

Source: Eurostat (tsdde100)



**Figure 8.2:** Employment rate of older workers, by country, 2008 (%)

Source: Eurostat (tsdde100)

**Indicator relevance**

The employment rate of older workers monitors the operational objective of ‘significantly increasing the labour market participation of women and older workers according to set targets’. It contributes to identify potential pressures for pension systems that result from ongoing changes in the age structure of the workforce and early retirement schemes. The indicator is linked to the target set at the Stockholm European Council in 2001 of achieving a 50 % employment rate of older people by 2010.

The participation of older people in the labour market indicates, among other things, the adaptability of the EU labour market to ageing conditions. The current EU demographic context demands solidarity between (and within) generations to secure and increase the quality of life of citizens as a precondition for lasting individual well-being. Several recent EU documents emphasise the challenges for providing adequate pensions and social protection systems to the elderly while also guaranteeing healthy public finances <sup>(2)</sup>.

**Definition**

Employment rate of older workers is defined as the number of persons (females, males) aged 55-64 in employment as a share of the total population (females, males) of the same age group. The employed population consists of those persons who during the reference week performed work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent.

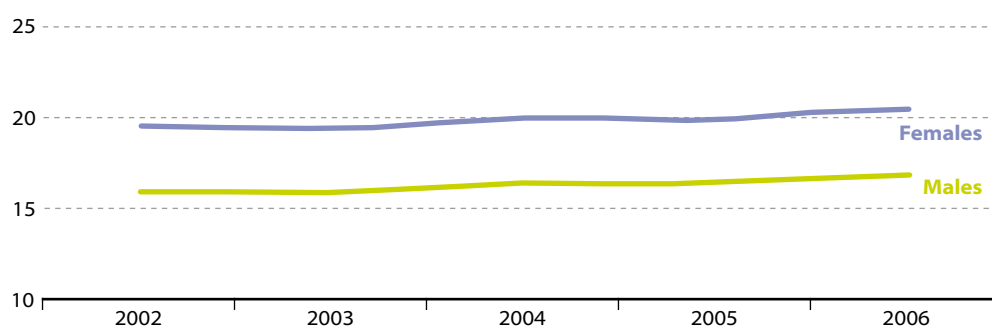
## Life expectancy at age 65

There was progress in life expectancy at age 65 in the EU-27 for men and women over the period 2002 to 2006



Data available show that life expectancy of men at 65 in the EU-27 steadily increased over the period 2002 to 2006 from 15.9 to 16.8 years. The indicator also shows favourable progress for women, rising from 19.5 to 20.4 years over the same period. It is estimated that life expectancy at retirement age – conventionally at 65 – in the EU-27 will rise by 5.4 years for males and 5.2 years for females over the period 2008-2060 <sup>(3)</sup>.

Life expectancy at age 65 varies across EU countries. Women live longer than men everywhere but overall figures are lower in eastern European countries. The differences are closely linked to differences in living and working conditions. Member States aim at improving primary and preventive care and access to health care <sup>(4)</sup>. For the most part, the projected increase in life expectancy is expected to take place in eastern European countries, where current lower figures represent more scope for improvement.



### Analysis

*Life expectancy at age 65 for men and women steadily increased over the period 2002 to 2006*

**Figure 8.3: Life expectancy at age 65, by gender, EU-27 (years)**

Source: Eurostat (tsdde210)

The Sustainable Development Strategy encourages active and healthy ageing strategies as part of the actions to respond to 'social inclusion, demography and migration' challenges. Life expectancy at age 65 monitors the number of remaining life years anticipated for the elderly. It reflects improvements on wealth, nutrition and health care for older people.

The indicator also reflects challenges for the sustainability of public finances as a result of ageing populations. Increased life expectancy implies more demand for pensions, health and long-term care. This issue is particularly important in the future EU demographic context, since the very old population group (80+) is estimated to grow faster than any other age group over the following decades <sup>(5)</sup>.

Life expectancy at age 65 is defined as the average number of years still to be lived by a woman or a man who has reached the age 65, if subjected throughout the rest of his or her life to the current mortality conditions (age-specific probabilities of dying).

### Indicator relevance

### Definition



## Fertility rate



The number of children per woman in the EU-27 increased between 2000 and 2006

### Analysis

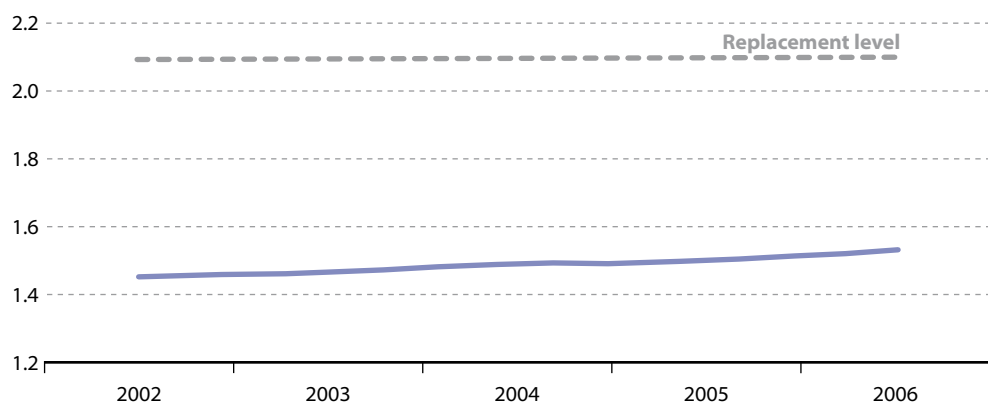
*Fertility rates have slightly increased but remain below the population replacement level*

The fertility rate indicates the scale of a society's population renewal. The EU-27 fertility rate annually increased by 1.3 % on average over the period 2000 to 2006. Country data show that the fertility rates of most Member States have remained below the population replacement level of 2.1 children per woman set for developed countries for the last 30 years at least.

Even though the number of children per woman is projected to decrease or remain constant in north-western Europe and increase in the rest of the EU countries over the period 2008 to 2060, it is estimated that all Member States will remain below the population replacement level <sup>(6)</sup>.

**Figure 8.4: Total fertility rate, EU-27**  
(number of children per woman)

Source: Eurostat  
(tsdde220)



NB: The fertility figures are Eurostat estimates.

### Indicator relevance

A fertility rate above the population replacement level for developed countries, estimated at 2.1 children per woman, is seen as an asset for guaranteeing the future sustainability of pensions, health and long-term care expenditure. It indicates a future increase of labour supply, important to promote economic growth, and reflects imbalances across age groups that can lead to pressures on public finances.

Fertility rates are linked to the reconciliation of work and family and better conditions for families. These issues are identified in the Sustainable Development Strategy as one of the actions to respond to the 'social inclusion, demography and migration' challenge.

### Definition

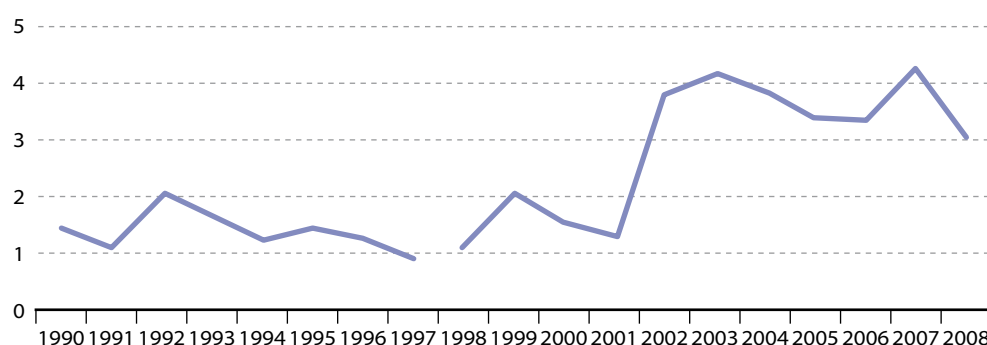
The indicator is defined as the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age of a given year. This rate is, therefore, the completed fertility of a hypothetical generation, computed by adding the fertility rates by age for women in a given year.

## Migration

The immigration rate to the EU-27 is higher than the emigration rate, but has decreased over the period from 2002 to 2008

Net migration, in other words, the difference between immigration and emigration is positive in the EU-27. However, the number of immigrants fell from 1.85 million to 1.5 million between 2002 and 2008. This translates into a decline of the net migration rate – that is the number of migrants per thousand inhabitants – from 3.8 to 3.0, which represents an annual average decrease of 3.9 %.

According to the EUROPOP2008 population projections, immigration into the EU-27 may further decelerate in coming years. It is estimated that the rate of net migration will drop from the current level of 3.3 per thousand inhabitants to 1.6 by 2060 <sup>(7)</sup>.



### Analysis

*The rate declined from 3.8 to 3 immigrants per 1 000 inhabitants between 2002 and 2008*

**Figure 8.5:** Crude rate of net migration, including corrections, EU-27 (per 1 000 inhabitants)

Source: Eurostat (tsdde230)

NB: Data up to 2001 are not comparable with 2002 and later data; break in series in 1998.

The Sustainable Development Strategy recognises the favourable contribution of a positive net migration to the demographic challenges the EU faces. It also emphasises the need for developing migration policies that strengthen integration and facilitate access to the labour market for migrants and their families.

The European Union acknowledges the potential contribution of migrants to alleviate pressures on public finances but stresses the risk of relying on migrant workers to attain public finance sustainability. Economic and financial reforms are essential to tackle financial strains generated by the current EU demographic context <sup>(8)</sup>.

The indicator is defined as the ratio of net migration during the year to the average population in that year, expressed per 1 000 inhabitants. The crude rate of net migration is the difference between the crude rate of increase and the crude rate of natural increase, that is, net migration is considered as the part of population change not attributable to births and deaths.

### Indicator relevance

### Definition



## Elderly population compared to working-age population

The ratio of elderly people to the working age population in the EU-27 has been constantly increasing. It grew by 1.1 % on average per year between 2000 and 2008 and is expected to continue rising in following decades

### Analysis

*The old-age dependency ratio has steadily increased*

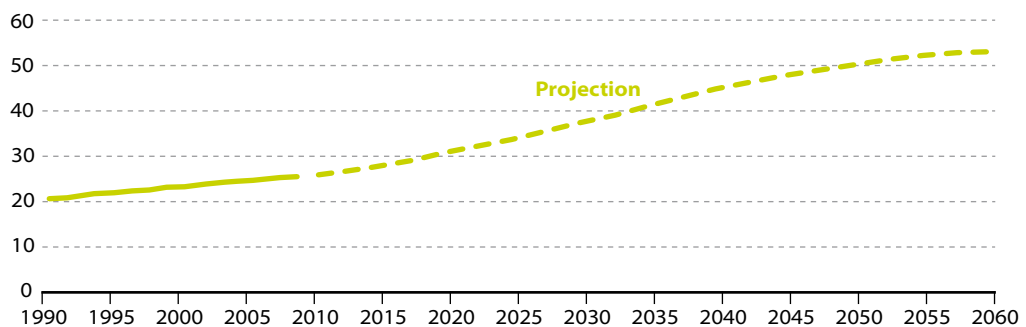
*The ratio is projected to double by 2060*

The ratio of elderly people to the population of working age in the EU-27 has steadily increased since 1990. Low fertility rates and longer lives result in a shifting balance between the elderly and working age populations. A high old-age dependency ratio can generate strain in labour-tax-funded pensions systems, especially with early retirement policies, which are estimated to cover around 20 % of the EU population aged 55-64 <sup>(9)</sup>.

The old-age dependency ratio is projected to double by 2060 <sup>(10)</sup>. Whereas there is currently one person aged 65 years or over per four persons of working age, in 2060 the ratio is expected to be one to two according to the latest EUROPOP2008 population projections. The share of people aged 65 years or over in the total population is projected to increase from 17 % to 30 % in 2060. Similarly, the number of people aged 80 years or over is projected to almost triple from 21.8 million in 2008 to 61.4 million in 2060 <sup>(11)</sup>.

**Figure 8.6: Old-age dependency ratio, EU-27 (%)**

Source: Eurostat (tsdde510 and tsdde511) and EUROPOP2008 convergence scenario



### Indicator relevance

The old-age dependency ratio reflects the balance between the elderly and population of working age. It provides a rough indication of the potential pressure that ageing population could represent to public finances, depending on the age of retirement and the scale in which pension systems depend on tax-payers or public funding.

The indicator provides useful evidence to monitor the sustainability and adequacy of pensions in the context of demographic changes in the EU, which is recognised in the Sustainable Development Strategy as an important issue of the coming decades. The old-age dependency ratio is estimated to be the dominant factor pushing public expenditure in the coming decades <sup>(12)</sup>.

### Definition

The old-age dependency ratio is defined as the ratio between the (projected) total number of elderly persons (aged 65 and over) and the (projected) number of persons of working age (from 15 to 64).





## Income level of over-65s compared to before

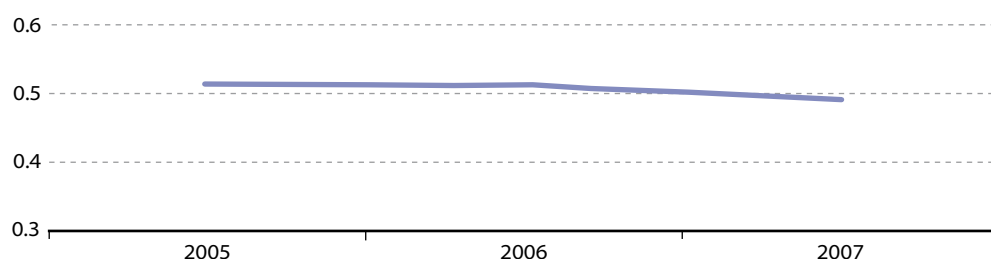
The income level of over-65s relative to their income before retirement has shrunk in the EU-25 between 2005 and 2007



The aggregate replacement ratio indicates the level of income of pensioners relative to their income before retirement. The indicator has moved from above to below 0.5 over the period 2005 to 2007 in the EU-25. This means that pensions are less than half of the incomes before retirement. The aggregate replacement ratio across Member States fluctuates between 0.61 and 0.29; the majority of EU-25 countries have aggregate replacement ratios below 0.5.

Differences between countries are generated by differences in demography and variations in pension schemes, particularly the generosity of benefits and indexing of pensions. Most countries have pensions indexed to prices or a hybrid combination of wages and prices that fail to capture wage increases.

Recent pension reforms in a number of Member States will result in increasing expenditure on pensions. Therefore, it is necessary to closely monitor pension outcomes, particularly in Member States prone to be affected by inadequate pension provision. It is worth noting that additional factors, such as differences in household composition and design of social protection and taxation systems, could also have strong influence on overall living standards of individuals<sup>(13)</sup>.



**Figure 8.7:**  
Aggregate replacement ratio, EU-25

Source: Eurostat (tsdde310)

The Sustainable Development Strategy underlines the importance of the adequacy of pensions in the framework of social inclusion. The aggregate replacement ratio monitors the adequacy of income for those no longer in work.

The indicator is linked to the overall objective of securing and increasing the quality of life of citizens as a precondition for lasting individual well-being. The income level of pensioners is one of the factors that determine their risk of poverty and social exclusion.

The indicator is defined as the ratio of the median individual gross pensions of the 65-74 age group relative to the median individual gross earnings of the 50-59 age group, excluding other social benefits. It therefore reflects the level of retired persons' pensions relative to the income from work of people in the decade before retirement.

### Analysis

*The majority of states have aggregate replacement ratios below 0.5*

### Indicator relevance

### Definition



## Risk of poverty for over-65s



There has been no change in the risk of poverty for elderly people in the EU-27 between 2005 and 2007. Every fifth person over 65 years old is at risk of being or becoming poor

### Analysis

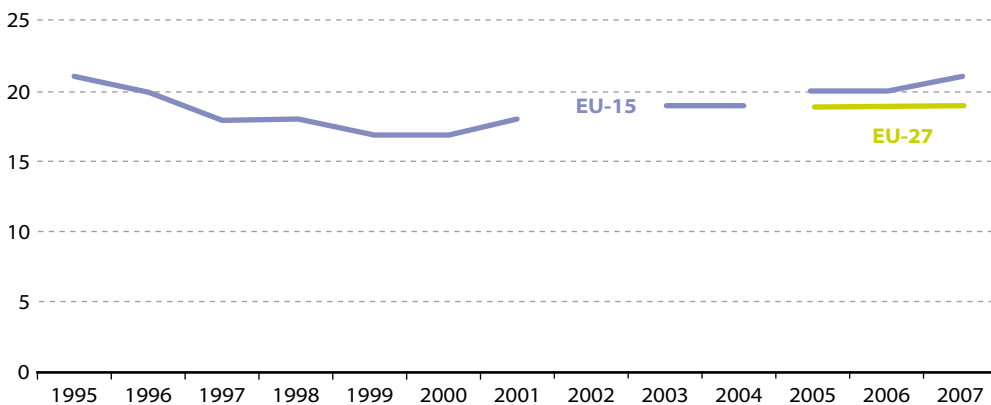
*The risk of being or becoming poor is higher than the average for older people*

The proportion of persons aged 65+ at risk of poverty in the EU-27 remained at the same level of 19 % between 2005 and 2007. The longer time-series available for EU-15 indicates that the decline in the risk of poverty for over-65s between 1995 and 2000 has shifted to a tendency to increase between 2000 and 2007.

At risk of poverty rates for older people vary substantially between Member States, ranging from 5 % to 51 % in 2007. Older people are more at risk of poverty than the overall population. Some 16 % of EU citizens live at a risk of poverty, with women among the most at risk (see chapter on social inclusion). 22 % of the women over 65 were exposed to being or becoming poor in 2007.

**Figure 8.8:**  
At-risk-of-poverty rate for persons aged 65 years and over (%)

Source: Eurostat (tsdde320)



NB: Eurostat estimates (except 2005-2007); break in series in 2005.

### Indicator relevance

The at-risk-of-poverty rate for persons aged 65+ reflects the adequacy of income for the elderly relative to the average income of the total population. It is related to the Sustainable Development Strategy objective of making a decisive impact on the reduction of the number of people at risk of poverty and social exclusion by 2010. For future retired people, this also implies ensuring decent wage levels during the working age, so as to generate decent pensions.

### Definition

The indicator is defined as the share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income (after social transfers). Retirement and survivor's pensions are counted as income before transfers and not as social transfers. The use of equivalised incomes means that this indicator takes account of income from other household members.



## Public debt

Changes in general government debt as a percentage of GDP between 2000 and 2008 in the EU-27 reflect a trend away from attaining sustainable public finances

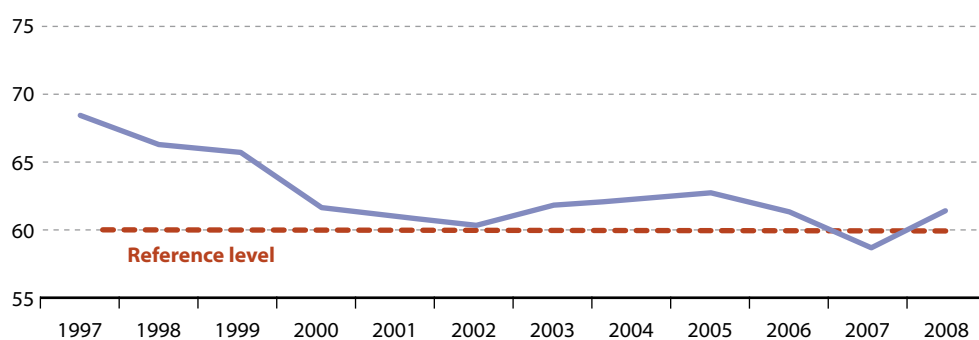


The EU-27 general government debt-to-GDP ratio declined overall over the period 2000 to 2008, from 61.9 to 61.5 %. Only in 2007 did it fall below the euro-zone reference value of 60 %. In 2008 it rose again above the reference level. The increase is likely to be due to the ongoing financial crisis.

General government debt-to-GDP ratios of Member States range from 3.5 % up to 104 %. It is estimated that more than half of Member States face medium to high risks to their public finances on the basis of current policies <sup>(14)</sup>.

### Analysis

*Government debt ratios of Member States range from 3.5 % up to 104 %*



**Figure 8.9: General government debt, EU-27 (% of GDP)**

Source: Eurostat (tsdde410)

The Sustainable Development Strategy supports the efforts of Member States to modernise social protection systems and ensure their sustainability. General government debt as a percentage of GDP reflects the health of public finances, essential to meet the increasing needs of ageing populations and to promote economic growth. It is also essential to avoid handing down debts to next generations.

The indicator monitors progress towards the EU reference value of 60 %. Public debts below this level should be attained by raising employment rates and productivity and promoting reforms on health and long-term care systems, without compromising expenditure on welfare.

### Indicator relevance

The indicator is defined as general government gross debt as a percentage of GDP at current market prices. Gross debt refers to the stock of amounts borrowed by the general government (i.e. state, local government and social security funds) to support its financing requirements. General government sector comprises the subsectors of central government, state government, local government and social security funds.

### Definition



## Retirement age



Changes in the retirement age over the period 2001 to 2007 were insufficient to be on the EU target path to reach an average of 65 years in 2010

### Analysis

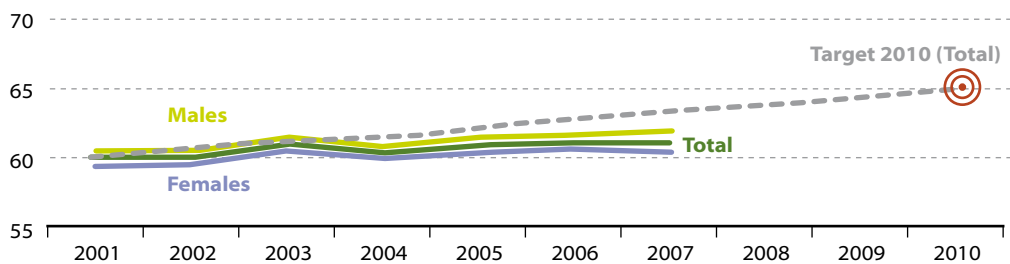
The EU-27 average exit age from the labour market steadily increased between 2001 and 2007 from 59.9 to 61.2 years. Compared to the linear target path the EU should have reached this level in 2003; thus by 2007 there was a time lag of four years.

*The target of delaying the retirement age to 65 years is unlikely to be achieved by 2010*

The indicator shows that men are closer to the target path than women. Whilst the delay in the average retirement age of men relative to the target path was three years in 2007, that of women was five years. Among the EU countries average age of withdrawal from the labour market varies between 58.7 and 64.4 years.

**Figure 8.10:** Average exit age from the labour market, EU-27 (years)

Source: Eurostat (tsdde420)



NB: 2004-2007 Eurostat estimates

### Indicator relevance

The Sustainable Development Strategy stresses the importance of 'solidarity between and within generations' on the overall objective of the 'social inclusion, demography and migration' challenge. The average exit from the labour market reflects whether the EU is shifting towards longer work lives, which are essential to ensure the sustainability and adequacy of pension systems and health and long-term care.

The indicator monitors progress towards the target set at the Barcelona European Council of March 2002 that 'a progressive increase of about five years in the effective average age at which people stop working in the European Union should be sought by 2010'. It is also considered on the European employment strategy as part of the parameters for evaluating EU employment policies.

### Definition

The indicator represents the average age at which active persons definitively withdraw from the labour market.

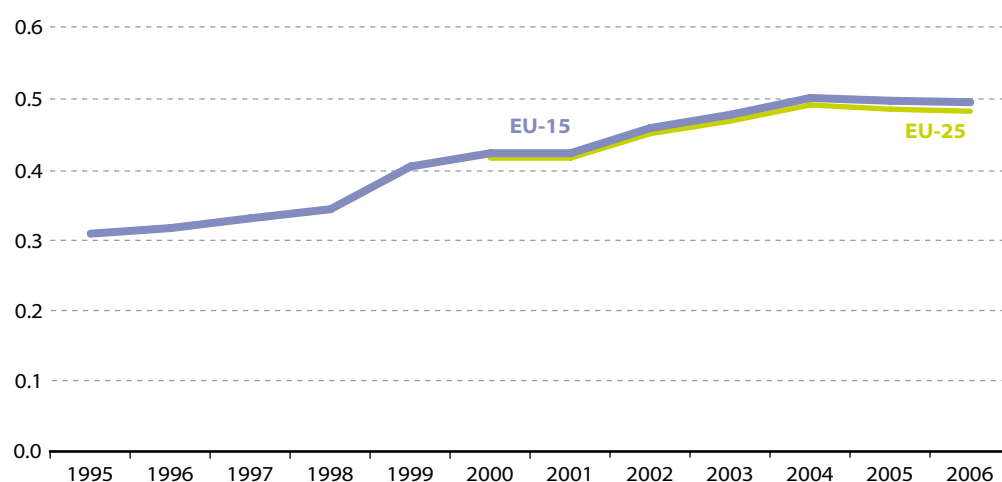


## Expenditure on care for the elderly

The share of EU-25 public expenditure on care for the elderly in GDP has gone slightly down since 2004 following a period of steady increase since 2000

EU-25 social protection expenses for the elderly beyond pensions and medical care steadily increased between 2000 and 2004, rising from 0.4 % to 0.5 % of GDP. After 2004 the indicator shows a slight decrease which is also reflected in EU-27 data for 2005 and 2006 (not shown).

Member States' expenditure on care for older people ranges from less than 0.1 % up to nearly 2.5 % of GDP with no apparent geographical or socio-economic pattern among the countries.



NB: 2005-2006 provisional values.

### Analysis

*Expenditure in Member States ranges from less than 0.1 % up to nearly 2.5 % of GDP*

**Figure 8.11:**  
Expenditure on care for elderly (% of GDP)

Source: Eurostat (tsdde530)

Expenditure on care for the elderly monitors the relative level of financial resources required to provide social protection to older people, other than pensions. The indicator is linked to the need for ensuring that social services contribute actively to social inclusion, recognised in the Sustainable Development Strategy.

The indicator reflects the pressures on public finances resulting from increases in the expenditure required to provide adequate care. Increases in expenditure on care for the elderly are not necessarily generated by more demand for care. They can also result from rising costs in services provision.

The indicator is defined as the percentage share of social protection expenditure devoted to old-age care in GDP. These expenditures cover care allowances, accommodation, and assistance in carrying out daily tasks.

### Indicator relevance

### Definition



## The impact of ageing on public expenditure

Age-related public expenditure is projected to rise from 23.1 % of GDP in 2007 to 27.8 % of GDP in 2060

### Analysis

*Whilst pensions expenditure is estimated to increase in most countries, the relative level of income of over-65s is estimated to increase only in some*

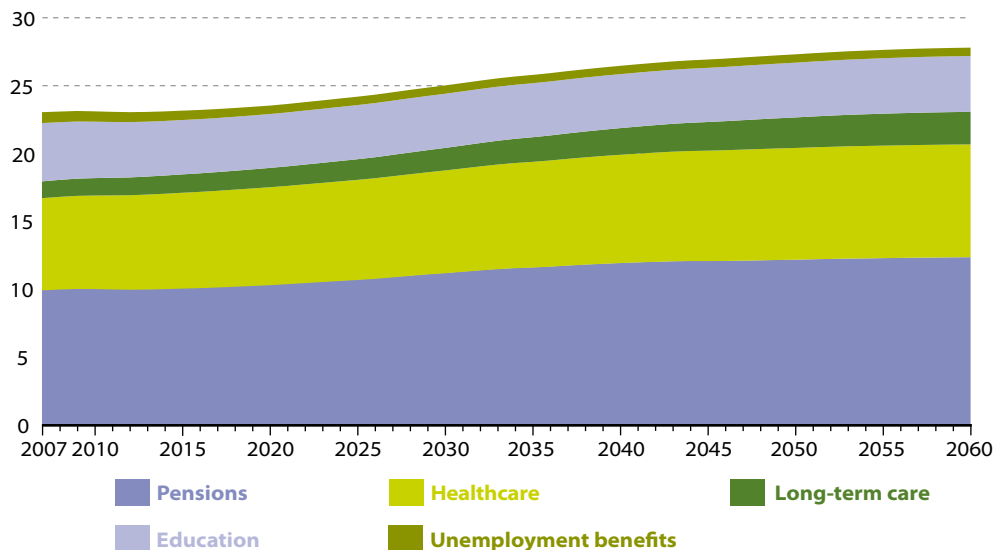
The projections of current trends shown here provide an insight into the possible future development of age-related public spending. They are therefore a useful indication of where policy action could be needed.

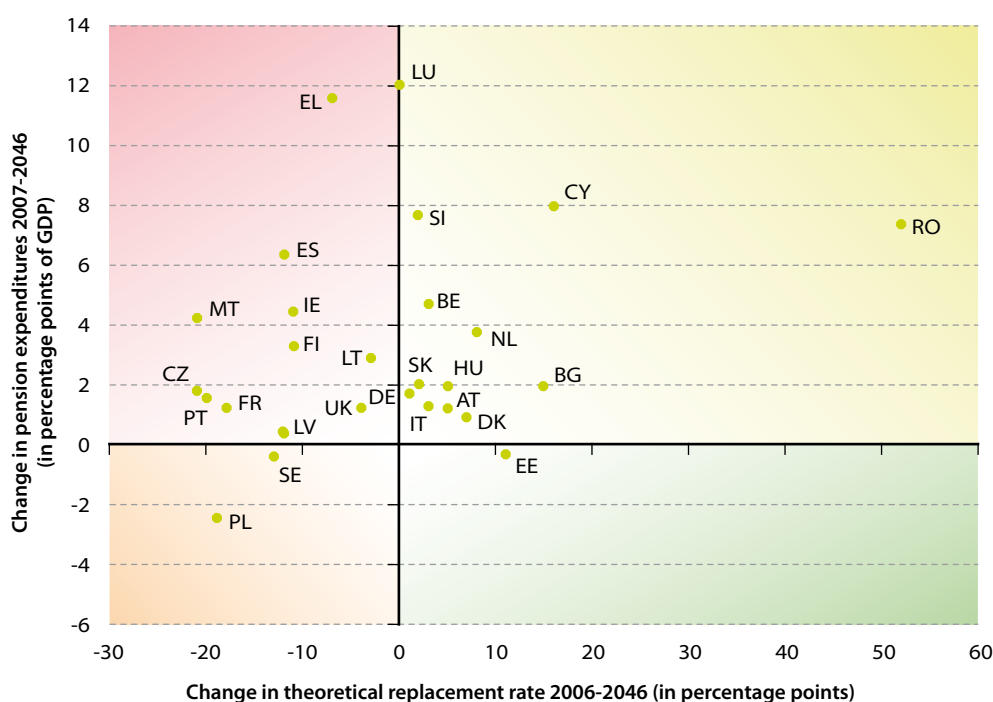
Age-related public expenditure is projected to rise from 23.1 % of GDP in 2007 to 27.8 % of GDP in 2060. This increase is mainly driven by pensions and healthcare. Public expenditure on pensions is projected to increase from 10.2 % of GDP to 12.6 % of GDP over the period 2007 to 2060.

Changes in public pensions expenditure indicate the likely evolution of expenditure on pensions and changes in projected theoretical income replacement ratios indicate the likely income level of pensioners. Projections for the Member States indicate that more public expenditure in pensions will not necessarily result in higher income for pensioners. Whilst public pensions expenditure is estimated to increase in most EU-27 countries, the level of income of pensioners relative to their income before retirement is estimated to increase only in 13 countries.

**Figure 8.12:**  
Projected evolution of EU-27 age-related public spending — baseline scenario (% of GDP)

Source: Economic Policy Committee





**Figure 8.13:**  
Projected evolution of theoretical income replacement ratios and pension expenditures of public pension schemes

Source: Economic Policy Committee

The Sustainable Development Strategy calls for actions to create a socially inclusive society maintaining sustainable public expenditure. These indicators illustrate the likely evolution of expenditure on and adequacy of pensions. They are indicative of the future adequacy of needs combined with future sustainability of public finances.

### Indicator relevance

Changes in public pensions expenditure is defined as the change in pensions expenditure at constant prices compared to the previous year. Changes in projected theoretical income replacement ratio relates to current and projected, gross (public and private) and total net replacement rates. The theoretical income replacement ratio compares collectively the theoretical level of income from pensions at the moment of take-up with the income from work in the last year before retirement for a hypothetical worker.

### Definition





## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Employment rate of older workers

The indicator is based on the EU labour force survey (LFS). For more information on the LFS see the methodological notes on 'Employment and unemployment' in the chapter 'Socioeconomic development'.

### Life expectancy at age 65

Data are compiled from information on deaths and population by sex and single year of age supplied by the National Statistical Institutes. Life expectancy at different ages is calculated by Eurostat for all countries using a harmonised methodology.

### Fertility rate

Data are compiled from information on births by single year of age of the mother and female population by single year of age supplied by the National Statistical Institutes. Age specific fertility rates and total fertility rate are calculated by Eurostat for all countries using a harmonised methodology.

### Migration

Net migration is defined as the difference between immigration and emigration. It is calculated by Eurostat as the difference of migration flows taking into account changes in the population size that cannot be classified as births, deaths, immigration or emigration (statistical adjustment). This includes late notifications of demographic events, which the country decides not to add to the pertinent component. In the absence of reliable information on migration flows, net migration is generally estimated on the basis of the difference between (total) population change and natural change between two dates. Thus statistical adjustments are incorporated in the net migration.

### Old-age dependency ratio

Old-age dependency ratio is calculated by Eurostat based on single year of age population on 1 January of each year, provided by National Statistical Institutes. It is conventionally defined as the ratio of the population aged 65+ divided by the population aged 15-64, expressed in percentage.

Population projections are what-if scenarios that aim at providing information about the likely future size and structure of the population. Eurostat's population projections convergence scenario is one of several possible population change scenarios based on assumptions for fertility, mortality and migration.

### Income level of over-65s compared to before

Data for the aggregate replacement ratio are drawn from the Community statistics on income and living conditions (EU-SILC). For 2005, the aggregate replacement ratio is

based on net income components for ES, EL, IT, LV, PT. EU aggregate figures are calculated as population-weighted averages of national values. For more information on EU-SILC see 'Indicators based on the at-risk-of-poverty rate (Poverty risk, poverty intensity, working poor)' in the chapter 'Social inclusion'.

### Risk of poverty for over-65s

Data are derived from the European Community household panel (ECHP) and the Community statistics on income and living conditions (EU-SILC). The population consists of all persons living in private households. For more information on EU-SILC see 'Indicators based on the at-risk-of-poverty rate (Poverty risk, poverty intensity, working poor)' in the chapter 'Social inclusion'.

### Public debt

Data are based on the European system of national accounts (ESA 95). Debt is valued at nominal (face) value, and foreign currency debt is converted into national currency using end-year market exchange rates (though special rules apply to contracts). Basic data are expressed in national currency, converted into EUR using end-year exchange rates for the EUR provided by the European Central Bank.

### Retirement age

The indicator is calculated on the basis of a probability model considering the relative changes of activity rates by single age group from one year to next. The activity rate represents the labour force (employed and unemployed population) as a percentage of the total population for a given age. The comparison of activity rates by single age group in two consecutive years gives a probability of remaining in the labour market as people get one year older. Those probabilities follow a certain probability distribution. The indicator is then calculated as the expected value of the probability distribution for people in the age group 50-70.

### Expenditure on care for the elderly

Data are derived from the European system of integrated social protection statistics (ESSPROS). For more information on the ESSPROS see below. Old-age care is not a category which is explicitly defined within ESSPROS, but has been aggregated from the following benefits from the old-age function: care allowances, accommodation and assistance in carrying out daily tasks.

### The impact of ageing on public expenditure

Data are taken from the European system of integrated social protection statistics (ESSPROS). For more information on the ESSPROS see below. The 'pensions' aggregate comprises the major part of periodic cash benefits under the disability, old-age and survivors functions and some benefits under the unemployment function. It is defined as the sum of the following social benefits (followed by the function to which the category of benefits belongs):



disability pension, early-retirement benefit due to reduced capacity to work, old-age pension, anticipated old-age pension, partial pension, survivors' pension, early-retirement benefit for labour market reasons (unemployment function).

#### ESSPROS

Data on expenditure and receipts of social protection schemes are drawn up according to the ESSPROS methodology. ESSPROS stands for European system of integrated social protection statistics, a harmonised system providing a means of analysing and comparing financial flows related to social protection. Social protection encompasses all interventions from public and private

bodies intended to relieve households and individuals of the burden of a defined set of risks or needs, provided that there is neither a simultaneous reciprocal nor an individual arrangement involved. The list of risks or needs that may give rise to social protection is fixed by convention as follows: sickness/health care; disability, old-age; survivors; family/children; unemployment; housing; social exclusion not elsewhere classified. In particular old-age benefits include mainly old-age pensions and the provision of goods and services (other than medical care) to the elderly.

ESSPROS data referring up to 2007 collection were compiled in accordance with the ESSPROS manual 1996; starting from 2008 the new ESSPROS manual came into force as the methodological reference related to the legal basis.

## Chapter notes

- <sup>(1)</sup> Commission communication, *Proposal for the joint report on social protection and social inclusion 2009*, COM(2009) 58.
- <sup>(2)</sup> European Commission, *Implementing the renewed Lisbon Strategy for growth and jobs: a year of delivery*, Luxembourg 2007, COM(2006) 816
- <sup>(3)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Underlying assumptions and projection methodologies', *European Economy*, No 7, 2008.
- <sup>(4)</sup> European Commission, *Joint report on social protection and social inclusion 2009*, Luxembourg 2009.
- <sup>(5)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060)', *European Economy*, No 2, 2009.
- <sup>(6)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Underlying assumptions and projection methodologies', op. cit.
- <sup>(7)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060)', *European Economy*, No 2, 2009, op. cit.
- <sup>(8)</sup> Commission communication, *Green Paper 'Confronting demographic change: a new solidarity between the generations'*, COM(2005) 94.
- <sup>(9)</sup> Commission communication, *Proposal for the joint report on social protection and social inclusion 2009*, COM(2009) 58.
- <sup>(10)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Underlying assumptions and projection methodologies', op. cit.
- <sup>(11)</sup> Giannakouris, K., Eurostat, *Ageing characterises the demographic perspectives of the European societies*, Statistics in Focus 7/2008, Luxembourg, 2008.
- <sup>(12)</sup> European Commission and the Economic Policy Committee, '2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060)', *European Economy*, No 2, 2009, op. cit.
- <sup>(13)</sup> European Commission, *Social protection and social inclusion 2008: EU indicators*, Luxembourg, 2009.
- <sup>(14)</sup> Mandl, U., Dierx, A. and Ilzkovitz, F., 'The effectiveness and efficiency of public spending', *European Economy, Economic papers*, No 301, 2008.



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## Global partnership

*'To promote sustainable development actively worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments'*

While the headline indicator on global partnership, the share of gross national income spent by the EU-27 on official development assistance to developing countries, has not been developing in line with the target path, other indicators display rather favourable trends, in particular as regards the globalisation of trade. In addition, the overall trend in financing for development (for which only EU-15 data are available) was positive.


**Table 9.1: Evaluation of changes in the global partnership theme (EU-27, from 2000)**


Level 1	Level 2	Level 3
 Official development assistance*	<b>Globalisation of trade</b>	
	 Imports from developing countries	 Share of imports from least-developed countries
		 Subsidies for EU agriculture
	<b>Financing for sustainable development**</b>	
	 Financing for developing countries	 Share of foreign direct investment in low-income countries
		 Share of official development assistance for low-income countries
		 Share of untied assistance
		 Assistance for social infrastructure and services
		 Assistance for debt relief
	<b>Global resource management</b>	
: CO <sub>2</sub> emissions per inhabitant	 Assistance for water supply and sanitation**	


\* From 2005


\*\* EU-15 data

**LEGEND:**

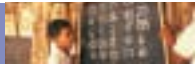
 clearly favourable change/on target path

 moderately unfavourable change/far from target path

 no or moderately favourable change/close to target path

 clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



## Overview of main changes

### Headline indicator

**Headline indicator is not on target path** The share of gross national income (GNI) spent on official development assistance (ODA) to developing countries decreased slightly between 2005 and 2008, thus falling below the target path to 0.56 % set for 2010 as well as to 0.7 % to be reached by 2015.

### Globalisation of trade

**Globalisation of trade increased** Imports from developing countries constantly increased between 2000 and 2008, marking further globalisation of international trade. Imports from the least-developed countries progressed in line with the EU objective of increasing their share, but overall remain low.

**EU has reduced agricultural subsidies** The EU has reduced its agricultural subsidies in line with its target to substantially reduce trade-distorting support measures. It has also complied with its commitments under the Agreement on Agriculture of the World Trade Organisation.

### Financing for sustainable development

**Overall trend concerning financing for development is positive** The overall trend in financing for development, which includes ODA as well as private flows and non-ODA official flows to developing countries, was positive. Between 2000 and 2007, the total amount of financing for development directed to developing countries increased on average by 9 % per year. This was mainly due to an increase in foreign direct investment (FDI). However, the low-income countries' share of EU-15 FDI in developing countries has not grown.

**Favourable developments in untying aid** In contrast, significant progress has been made in the untying of aid, i.e. the provision of funding to developing countries without restrictions on the procurement of the associated goods and services.

**Commitments for social development and debt relief increased since 2000** Bilateral ODA dedicated to social infrastructure and services increased with an average annual growth rate of 10.2 % between 2000 and 2007. Over the same period, activities related to debt increased by 14.6 % annually on average. The overall trend between 2000 and 2007 has thus been positive with exceptionally high commitments in 2005 and 2006.

### Global resource management

**There remains a large difference in resource use between the EU and developing countries, although this gap is narrowing** The level of CO<sub>2</sub> emissions per inhabitant in the EU and developing countries is an indicator that assists in comparing resource use between the two country groups. This indicator shows a strong inequality of resource consumption between the EU and developing countries. The gap in emitting CO<sub>2</sub> is, however, narrowing mainly due to growing emissions from some developing countries.

The ODA directed at water supply and sanitation grew by 7.7 % per year on average between 2000 and 2007, and represented 4.2 % of total bilateral ODA in 2007.



## Background

Fighting poverty and persistent global inequalities are key principles of sustainable development: 'All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of a majority of the people of the world' <sup>(1)</sup>. For developed countries this translates into accounting for environmental and social impacts of their production and consumption patterns, for economic implications of their trade schemes as well as for the quantity and effectiveness of their aid to developing countries. With the intention of assuming its responsibility the EU has adopted a number of commitments and policies:

With the Gothenburg Strategy, a commitment for sustainable development was expressed, recognising that sustainable development is a global objective that requires international action <sup>(2)</sup>. The external dimension of sustainable development was further recognised in the communication 'Towards a global partnership for Sustainable Development' <sup>(3)</sup>, where a comprehensive and integrated set of actions in order to contribute to global sustainable development was set forth.

The EU renewed its Sustainable Development Strategy (EU SDS) in 2006, setting out 'global poverty and sustainable development challenges' as key priorities. Targets under the EU SDS focus on increasing the level of aid, as well as its effectiveness and coherence, fostering productive employment and decent work for all at the global level, and strengthening international environmental governance. Importantly, the EU SDS also contains a commitment towards mainstreaming sustainable development concerns into other policy areas, especially trade, the Common Foreign and Security Policy and development cooperation.

In addition, the EU is committed to implementing Agenda 21, which provides a plan of action for integrating the economic, environmental and social pillars of sustainable development at the local, national, regional and global levels. The 2002 Johannesburg Political Declaration and the Johannesburg Plan of Implementation (JPOI) for Agenda 21 <sup>(4)</sup> – outcomes of the World Summit on Sustainable Development (WSSD) – address some of the major issues that humanity faces. These include poverty, food security, desertification, environmental degradation, loss of biodiversity, and climate change.

In 1992, the United Nations Commission on Sustainable Development (UN CSD) was established by the UN General Assembly in order to ensure the follow-up of the United Nations Conference on Environment and Development taking place in that year. Nowadays, the UN CSD – which the EU contributes towards – is the UN's high-level forum for sustainable development, reviewing progress on the implementation of the Agenda 21 and providing policy guidance to follow up the JPOI.

At the international level, the EU has also committed itself to supporting a number of policy initiatives which seek to tackle poverty through development, in particular the following:

The eight Millennium Development Goals (MDGs) constitute an internationally agreed framework to guide efforts and monitor progress in the field of development. They are drawn from the actions and targets contained in the Millennium Declaration adopted during the UN Millennium Summit in September 2000, and are meant to be achieved by 2015. Achieving the MDGs is a core objective of development policy, as stated in the EU Consensus on Development. In 2008, the Agenda for Action on MDGs was adopted in order to confirm this commitment.

In 2005, with the Paris Declaration on Aid Effectiveness, both the EU and its Member States committed themselves to the principles of ownership, alignment, harmonisation, mutual accountability and improvement of management and decision-making structures as guiding

*Fighting poverty – one of the major challenges for a sustainable development*

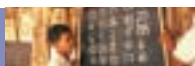
*EU recognises its key role in bringing about sustainable development*

*Global poverty and sustainable development are key challenges*

*Commitment to implement Agenda 21*

*Contribution to the UN CSD*

*EU engages in international policy initiatives on development*



principles for development cooperation <sup>(5)</sup>. This declaration also contains a set of monitorable actions and indicators aimed to accelerate progress in these areas, as well as targets to be achieved by 2010. In 2008, countries reviewed progress and adopted the Accra Agenda for Action, which reiterates the Paris Declaration targets and specifies actions to be taken by donor and developing countries for meeting these targets <sup>(6)</sup>.

The Code of Conduct on Complementarity and the Division of Labour in Development Policy is an initiative by the European Commission aiming to improve the cooperation policy performance by proposing a voluntary Code of Conduct for better division of labour between EU donors in developing countries. The Code is based on eleven principles designed to reduce the administrative formalities, to use the funds where they are most needed, to pool aid and to share the work to deliver more, better and faster aid.

With the 2002 Monterrey Consensus on Financing for Development <sup>(7)</sup>, the commitments to expand trade opportunities for developing countries, enhance conditions for foreign direct investment in developing countries, and increase ODA and debt relief were adopted. In 2008, countries met in Doha for the 2008 Follow-up International Conference on Financing for Development to Review the Implementation of the Monterrey Consensus, and reaffirmed their earlier objectives and commitments <sup>(8)</sup>.

*Eradication of poverty is the main aim of EU development policy*

The EU has also made a series of internal development-related commitments. In 2005, it adopted the European Consensus on Development, which defines common objectives, principles and policy coherence commitments in the area of development cooperation, as well as a renewed development policy. The Consensus states that the principal aim of its development policy is the eradication of poverty in line with the MDGs, in particular MDG 1.

*EU is concerned with development issues in various contexts*

Moreover, the fundamental principle of Policy Coherence for Development in 2005 was adopted <sup>(9)</sup>, wherein the need for an 'effective improvement in the coherence of developed countries' policies' was acknowledged <sup>(10)</sup>.

The EU and several Member States are furthermore part of the initiative on Mobilising European Research for Development Policies, founded in 2007. The network aims at enhancing a European perspective on development issues in the international arena and at creating common ground between European researchers and policymakers.

Also in 2007, the Global Climate Change Alliance (GCCA) was launched which through dialogue and bilateral support promotes the integration of climate change into development strategies of the most climate vulnerable countries, and aims to increasingly provide adaptation assistance through budget support.

*WTO and Doha Agenda acknowledge relevance of development concerns in trade policy*

Recent years have also seen growing awareness on the fact that development concerns must be given particular attention in other policy areas. Notably, the World Trade Organization's (WTO) fourth Ministerial Conference in Doha in November 2001 launched a new round of trade negotiations with a strong focus on development. The Doha Development Agenda <sup>(11)</sup> comprises commitments to further trade liberalisation and new rule-making, underpinned by commitments to substantially strengthen assistance to developing countries. At the time of writing, no agreement had been reached in the framework of the Doha Round.





### Box 9.1: Objectives related to global partnership in the Sustainable Development Strategy

Overall objective: To promote sustainable development actively worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments.

Operational objectives and targets

- Make significant progress towards meeting the commitments of the EU with regard to internationally agreed goals and targets, in particular those contained in the millennium declaration and those deriving from The World Summit on sustainable development held in Johannesburg in 2002 and related processes such as the Monterey consensus on financing for development, the Doha Development Agenda and the Paris Declaration on aid harmonisation;
- Contribute to improving international environmental governance (IEG), in particular in the context of the follow-up to the 2005 World Summit outcome, and to strengthening multilateral environmental agreements (MEAs);
- Raise the volume of aid to 0.7 % of gross national income (GNI) by 2015 with an intermediate target of 0.56 % in 2010;
- Promote sustainable development in the context of the WTO negotiations, in accordance with the preamble to the Marrakesh Agreement establishing the World Trade Organisation which sets sustainable development as one of its main objectives;
- Increase the effectiveness, coherence and quality of EU and Member States aid policies in the period 2005-2010;
- Include sustainable development concerns in all EU external policies, including the common foreign and security policy, inter alia, by making it an objective of multilateral and bilateral development cooperation.

## Potential linkages

Economic growth in the EU is likely to be linked to increased public and private funding for development and vice versa. Financing for development in turn contributes to EU economic prosperity by creating markets and therefore jobs.

*Linkages with the socio-economic dimension*

According to the European Consensus on Development, a link exists between European development cooperation and fostering peace and stable political conditions in developing countries: 'Without peace and security, development and poverty eradication are not possible, and without development and poverty eradication, no sustainable peace will occur'<sup>(12)</sup>.

*Linkage with peace and security*

Financing for development and increased imports from developing countries, may impact on migration by improving living conditions and creating jobs thereby reducing the number of people leaving their countries. At the same time, the transformation of developing countries' economies into export economies may lead to food shortages and the destruction of subsistence livelihoods of small farmers, creating additional pressure for migration.

*Linkages with demographic changes*

Positive as well as negative effects on the environment (including improved environmental management, or more emissions and increased use of natural resources, of aid, trade and foreign investment) depend on the extent to which environmental objectives are taken into account as well as environmental standards are observed in development cooperation projects and economic and trade activities in developing countries.

*Linkages with natural resources, climate change and energy*

Developing countries are also affected by the environmental effects of EU production and consumption patterns. Its contributions to greenhouse gas emissions will have significant adverse impacts on developing countries that are particularly vulnerable to the impacts of climate change, especially least-developed countries and small island developing states. Contributions to enhanced international environmental governance will in turn have positive effects on developing countries.

Further reading

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Commission Staff Working Paper, *Where does the EU go from Doha? What prospects for meeting the EU targets of 2010 and 2015? Annual progress report 2009 on financing for development*, SEC(2009) 444

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High-Level Forum on Aid Effectiveness, *Paris Declaration on aid effectiveness*, Paris, 2005

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## Official development assistance

With no progress in official development assistance rates between 2005 and 2008, the EU-27 has not been developing in line with the target path to achieve 0.7 % in 2015



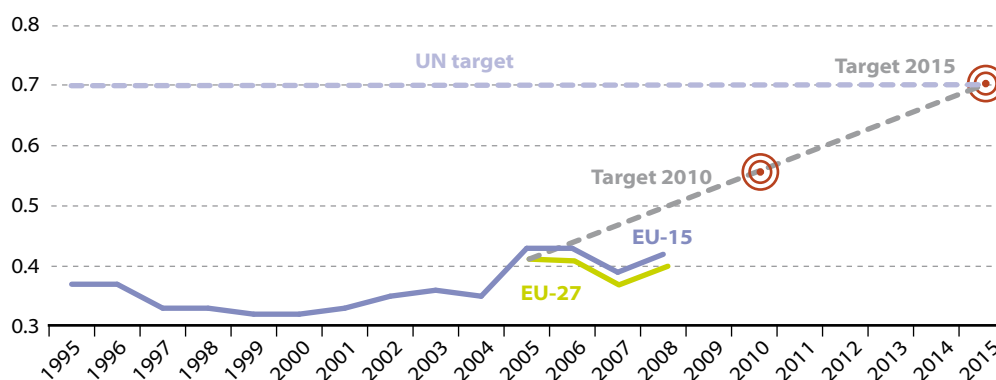
The percentage of gross national income (GNI) that EU countries spend on official development assistance (ODA) to developing countries serves as a measure of funds that directly support development in developing countries. In 2005, the EU established time frames for achieving a 0.7 % of GNI contribution to ODA, consistent with a longstanding UN target.

In 2008 the EU-27 spent 0.4 % of its GNI on ODA, 0.01 percentage points less than in 2005. The particularly high rates in 2005 and 2006 are, most likely, a reflection of political developments, such as the 2005 UN summit for reviewing the MDGs and the G8 summit in Gleneagles in those years.

The EU is not likely to achieve either its mid-term target of spending 0.56 % of GNI on ODA by 2010 or the 0.7 % UN target to be attained in 2015. To be on (linear) track to meet its 2010 and 2015 targets 0.51 % of GNI for ODA purposes should have been spent in 2008.

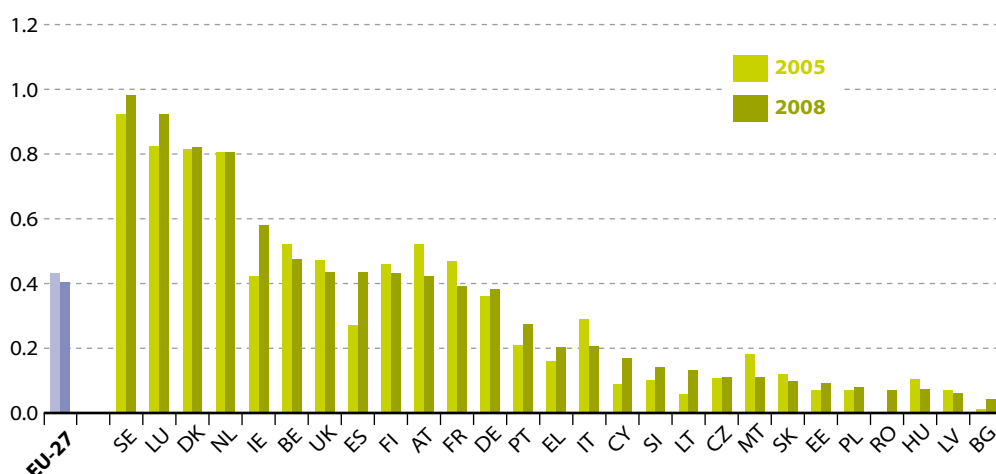
### Analysis

*EU is not on track to meet its 2010 and 2015 targets*



**Figure 9.1: Official development assistance as share of gross national income (%)**

Source: OECD, European Commission services (tsdgp100)



**Figure 9.2: Official development assistance, by country (% of gross national income)**

Source: OECD, European Commission services (tsdgp100)

**ODA rates of countries vary widely**

Contributions varied considerably between Member States in 2008, ranging from 0.04 % of GNI spent for ODA purposes by Bulgaria and 0.06 % spent by Latvia to 0.98 % of GNI dedicated to ODA by Sweden. Four Member States met the 0.7 % UN target in 2008.

**Significant increase in some Member States**

From 2005 to 2008, major increases in ODA were achieved by Ireland and Spain (0.16 percentage points respectively). Other country-specific increases were low in absolute terms – less than 0.1 percentage points – but still several of these countries now dedicate a much greater share of GNI to aid than in previous years in relative terms. For example, in 2008, Cyprus provided almost twice as much aid in 2008 as in 2005 (0.17 % vs. 0.09 %) and more than five times the 2004 amount (0.03 %). Equally, Lithuania more than doubled its aid rate from 0.06 % of GNI in 2005 to 0.13 % in 2008.

**ODA spent per inhabitant continues to grow in the EU-15**

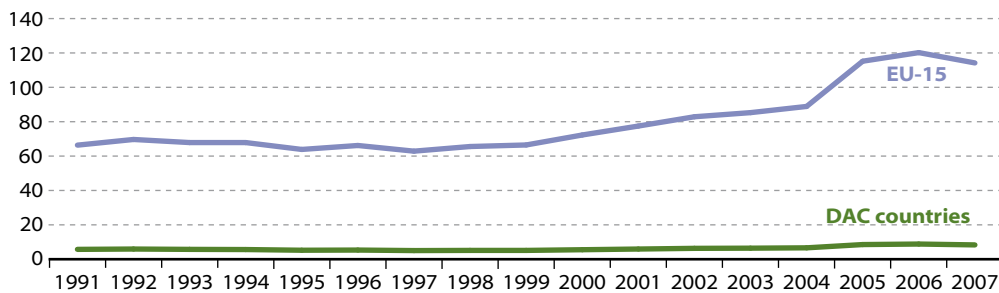
Furthermore, ODA can be analysed in relation to the amount of ODA spent per inhabitant in donor countries and received per inhabitant in recipient countries. The average contribution to ODA reached a high of EUR 114.3 per citizen in 2007, compared with EUR 72.4 in 2000, representing an average annual growth rate of 6.7 % over this period – much higher than the average inflation rate over the same period. In contrast, the mean annual rate of change between 1990 and 2000 was roughly 1 %.

**Recipient countries received an increase in ODA per capita with a peak in 2006**

In recipient countries, this translated into an increase in ODA per inhabitant up to EUR 8.5 in 2007 compared to EUR 5.7 in 2000, representing an average annual growth rate of 5.9 %. Over the previous period, between 1990 and 2000, the annual growth rate was 0.4 %. Although population in recipient countries grew, inhabitants received an absolute increase in ODA per capita from the EU, indicating a considerable increase in overall ODA.

**Figure 9.3: Official development assistance per capita in donor and recipient countries (EUR per inhabitant)**

Source: OECD, Eurostat (tsdgp520)



**Indicator relevance**

The percentage of GNI that the EU spends on ODA to developing countries serves as a measure of funds that directly support development in developing countries. In addition, ODA per capita is a contextual indicator: comparing the contribution of ODA per EU-15 citizen to the amount of assistance received by each inhabitant of DAC countries provides a pragmatic illustration of the contribution of every citizen to development aid.

The Sustainable Development Strategy includes as one of its objectives promoting sustainable development worldwide. To meet this goal, ODA should increase to 0.7 % of GNI by 2015 with an intermediate target of 0.56 % in 2010. The strategy also recalls the European Council conclusions of June 2005, in which differential targets were set for different Member States.

**Definition**

Net disbursement of ODA at current prices, ODA being official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 %. The indicator covers aid from EU countries to the countries mentioned in the DAC list. GNI at current prices equals GDP minus primary income payable by resident units to non-resident units, plus primary income received by resident units from the rest of the world.



## Imports from developing countries

EU-27 imports from developing countries increased substantially between 2000 and 2008. All country groups observed an increase, albeit to different degrees

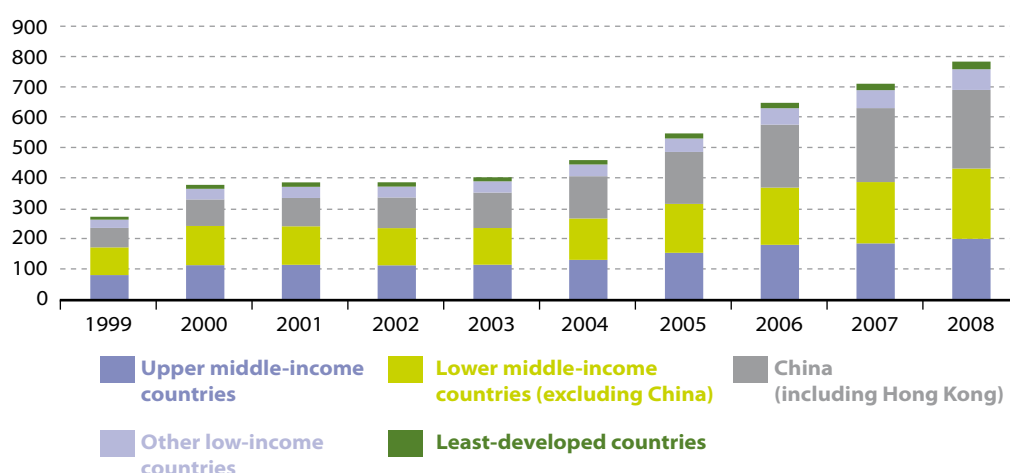


The indicator shows progress towards the objective of increasing the share of imports from developing countries.

In 2008, EU-27 imports from the OECD Development Assistance Committee (DAC) countries amounted to EUR 784.6 billion. From 2000 to 2008, imports grew at a mean annual rate of 9.6 %. Among developing countries, China was the most important trade partner, accounting for roughly a third of total EU-27 imports from DAC countries in 2008. Imports from China moreover rose by 14.5 %, whilst the other country groups showed growth rates of 7.4 to 8.6 %.

### Analysis

*The biggest share of developing country imports came from China*



**Figure 9.4: Imports from developing countries, by income group, EU-27 (EUR 1 000 million)**

Source: Eurostat (tsdgp210)

The importance of trade as a factor for development is becoming ever more evident. If accompanied by proper policies in other sectors, trade policies can promote economic development and help reduce poverty. EU import statistics indicate the ability of developing countries to access this market, but provide no measure of the use of environmentally and socially sustainable modes of production.

### Indicator relevance

One of the objectives of the Sustainable Development Strategy is to promote sustainable development in the context of the World Trade Organization negotiations. The European Consensus on Development states that particular attention will be paid to the least-advanced and most vulnerable countries in the completion of the WTO Doha Development Round.

This indicator is defined as the value at current prices of EU imports from the DAC countries. The indicator is successively broken down by income groups of countries following the World Bank definition.

### Definition

## Share of imports from least-developed countries



Least-developed countries' share of total imports into the EU-27 was higher in 2008 than in 2000

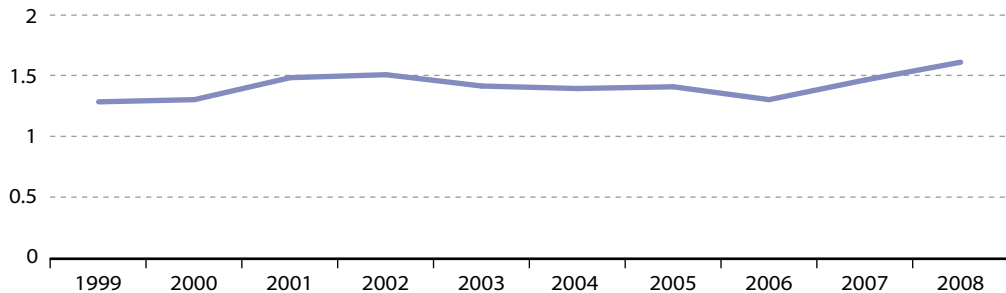
### Analysis

*LDCs share in imports grew, but at a slower pace than overall developing country imports*

The imports from least-developed countries (LDCs) compared to all imports from outside the EU showed progress towards the objective of increasing the share of imports from the 50 poorest countries of the world. LDCs' share in total extra-EU imports increased from 1.3 % in 2000 to 1.6 % in 2008, amounting to an average growth rate of 2.7 % per year. With a rate of 3.6 % the share of imports from all developing countries together grew however faster over the same period.

**Figure 9.5: Share of imports from least-developed countries in total extra-EU imports, EU-27 (%)**

Source: Eurostat (tsdgp210, tet00038)



### Indicator relevance

The importance of trade as a factor for development is becoming ever more evident. If accompanied by proper policies in other sectors, trade policies can promote economic development and help reduce poverty. EU import statistics indicate the ability of least-developed countries to access this market, but provide no measure of the use of environmentally and socially sustainable modes of production.

One of the objectives of the Sustainable Development Strategy is to promote sustainable development in the context of the World Trade Organization negotiations. The European Consensus on Development states that particular attention will be paid to the least-advanced and most vulnerable countries in the completion of the WTO Doha Development Round.

### Definition

This indicator is defined as the value of EU imports from least-developed countries at current prices. The classification of least-developed countries follows the World Bank definition.





## Subsidies for EU agriculture

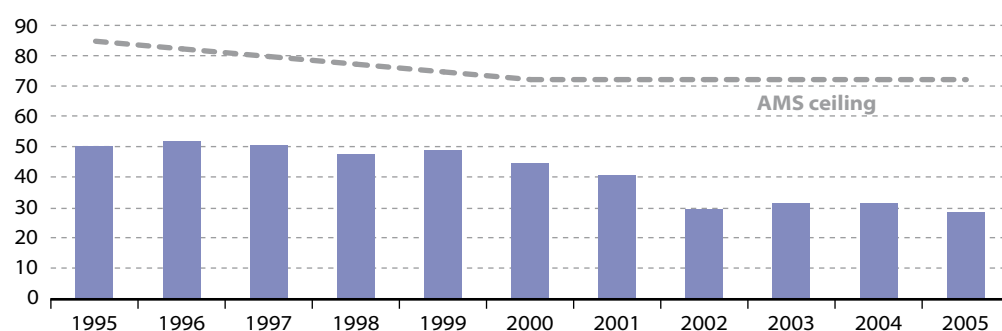
The amount of agricultural subsidies in the EU-27 considerably decreased between 2000 and 2005, resulting in a growing distance from the ceiling established under the World Trade Organization's Agreement on Agriculture



The indicator 'Aggregated measurement of support' (AMS) shows progress in reducing trade-distorting domestic agricultural subsidies.

While in 2000, the EU had still dedicated about EUR 44.5 billion, the amount was only about EUR 28.5 billion in 2005, despite enlargement. This corresponds to an average decrease rate of 8.5 % annually between 2000 and 2005. That rate was only 2.4 % between 1995 and 2000. The decline in AMS reflects the implementation of the successive reforms of the Common agricultural policy.

The World Trade Organisation (WTO)'s Agreement on Agriculture stipulated a reduction of support measures between 1995 and 2000. The EU has remained below the agreed ceiling in each year since the agreement entered into force and shows a favourably growing distance to the ceiling.



### Analysis

*Favourable downward trend of trade-distorting subsidies*

*The EU remained below its WTO ceiling for support*

**Figure 9.6:** Aggregated measurement of support, EU-27 (EUR 1 000 million)

Source: European Commission services (tsdgp240)

Agricultural subsidies make EU agricultural products cheaper and thus make it harder for developing countries to compete with the EU on agricultural markets.

This indicator gives an insight into one of the international commitments mentioned among the operational objectives of the Sustainable Development Strategy. In the field of agricultural trade, the European Consensus on Development <sup>(13)</sup> states that 'the EU will substantially reduce the level of trade distortion related to its support measures to the agricultural sector, and facilitate developing countries' agricultural development'.

Current AMS includes, in any given year, all price support and Amber direct payments that farmers receive and that are not excluded pursuant to other provisions of the Agreement on Agriculture. Amber refers to 'Amber Box Measures' which include certain 'trade distorting' forms of support. The ceiling represents the agreed not-to-be-exceeded reduction commitment. Current EU-27 AMS is elaborated on the basis of notifications to the WTO, i.e. EU-15 and new Member States' notifications before enlargement. AMS is only calculated for the EU as a whole. There is no breakdown by Member State.

### Indicator relevance

### Definition

## Financing for developing countries



Financial flows from the EU-15 to developing countries increased between 2000 and 2007. The single most important factor for this is a sharp increase in private flows, which almost doubled between 2000 and 2007

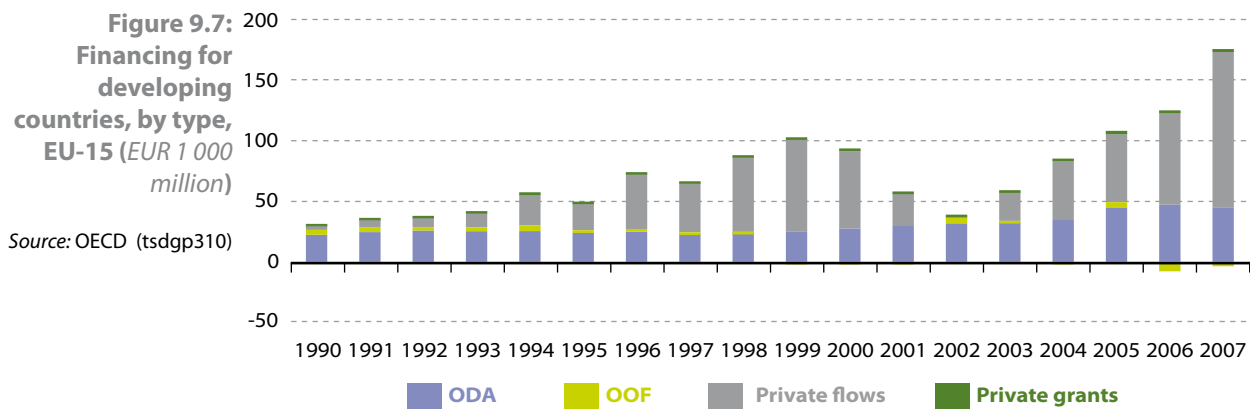
### Analysis

*Financing for development has almost doubled since 2000*

This indicator shows the amount of various kinds of monetary flows to developing countries, including both official and private financing. Total EU-15 financing for development has almost doubled since 2000, to about EUR 170 billion. From 1990 to 2000, financing for development almost tripled, with an increase in absolute terms of about EUR 60 billion. The mean annual change rates were 9.2 % between 2000-2007 as compared to 11.5 % between 1990 and 2000. There are, however, considerable variations from year to year.

*FDI is the single most important factor for increase*

The single most important factor for the overall positive trend is the sharp increase in private flows, mainly foreign direct investment (FDI), which has almost doubled since 2000. The mean annual rate of change from 2000 to 2007 was about 6.3 %. The pattern of FDI flows followed roughly EU-15 GDP growth rates. In contrast, the share of NGO grants in overall flows decreased from 2.4 % in 2000 to less than 1.5 % in 2007. Since 2000, the figure for other official flows (OOF) has been negative in four years and positive in three, with a negative overall sum. This means that the DAC recipient countries paid back more to the EU-15 than they received for this category.



### Indicator relevance

The indicator measures various kinds of financial inflows to developing countries and presents the most important contributions of different actors (private, governments and civil society). It encompasses the key aspects of the Monterrey consensus which highlights that ODA and FDI are key contributors to sustainable development.

### Definition

The indicator comprises net disbursements of official ODA, OOF, private flows and private grants. ODA consists of grants or loans from the official sector to promote economic development and welfare in the recipient countries. Private flows include private direct investment, export credits and financing to multilateral institutions. OOF are transactions which do not meet the conditions for eligibility as ODA, either because they are not primarily aimed at development or because they have a grant element of less than 25 %. Private grants refer to aid from private sources, mostly NGOs. The indicator covers aid from EU countries to the countries mentioned in the DAC list.

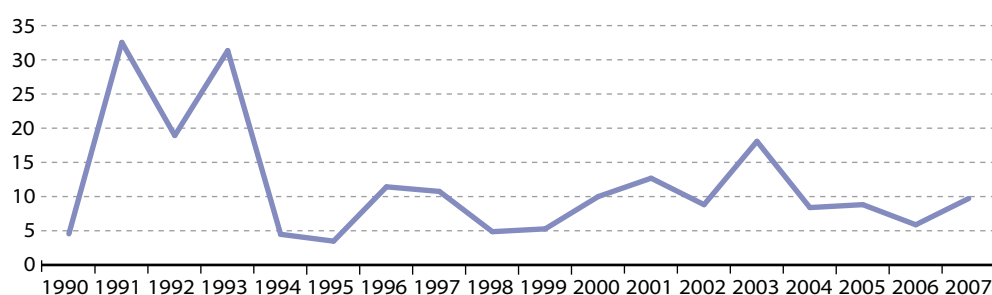
## Share of foreign direct investment in low-income countries

Least-developed countries and other low-income countries – the two poorest groups of developing countries – received a smaller share of EU-15 foreign direct investment in developing countries in 2007 than in 2000



The indicator shows the share of foreign direct investment (FDI) dedicated to low-income countries that are the least-developed countries (LDCs) and other low-income countries (OLICs). They did not benefit from the overall increase of FDI in developing countries between 2000 and 2007, experiencing a decline of 0.2 % in this period.

Looking at the two groups separately reveals that amounts of FDI in LDCs were negative in five years between 2000 and 2007, resulting in an overall flow of FDI from LDCs to the EU since a negative FDI figure means that the amount of capital repatriated to donor countries is higher than the flows to developing countries. The investments in the group of OLICs fluctuated considerably but never fell under 6.5 % of EU-15 FDI in developing countries in the same period.



### Analysis

*Share of low-income countries in FDI is roughly the same in 2000 and 2007*

*LDCs experienced an overall negative FDI flow*

**Figure 9.8: Share of FDI to low-income countries, EU-15 (% of country allocated FDI in developing countries)**

Source: OECD (tsdgp320)

The Monterrey Consensus and the Doha Declaration on Financing for Development identify private international capital flows as ‘vital complements to ... development efforts’ and stipulate that they should be increased. However, while investments are important for a country’s development, they may also have negative effects on people and the environment if social and environmental standards are not observed.

### Indicator relevance

FDI includes significant investments by foreign companies in production facilities or ownership stakes in national companies. The indicator covers FDI from EU countries to the countries mentioned in the DAC list. Shares are expressed as percentage of the overall FDI amount which is allocated to specific countries or country groups. The unallocated part of FDI (37 % in 2007) is not included. The classification of countries by income groups of countries follows the World Bank definition.

### Definition

## Share of official development assistance for low-income countries



Least-developed countries and other low-income countries – the two groups of poorest countries – received a slightly higher share of EU-15 official development assistance in 2007 as in 2000

### Analysis

*Close to 60 % for the country groups who have the priority in development policy*

The indicator shows the share of development aid dedicated to least-developed countries (LDCs) and other low-income countries (OLICs).

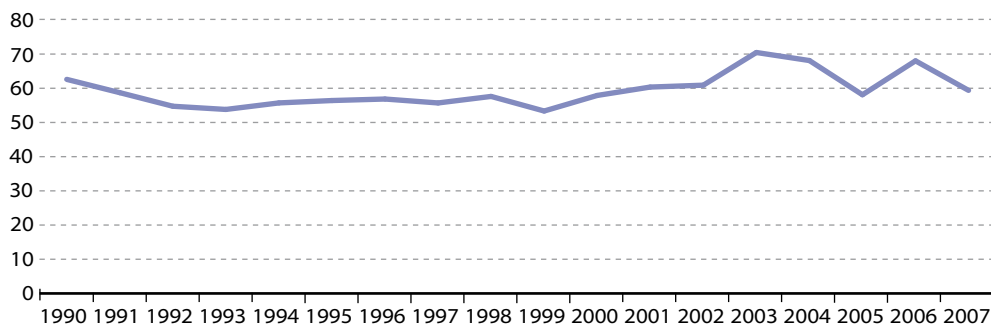
58.9 % of ODA went to low-income countries in 2007 (36.2 % to LDCs and 22.7 % to OLICs), while the share in 2000 had been 57.5 %. This amounts to an average annual growth rate of 0.4 %.

However, this doesn't translate in a fulfilment of the UN target of dedicating at least 0.15 % of GNI to ODA for LDCs. In 2007 the EU-15 only dedicated about 0.1 % of its GNI to least-developed countries – roughly the same share as in 2000 <sup>(14)</sup>.

ODA has always exceeded private flows in low-income countries and proved to be the less volatile of both contributors.

**Figure 9.9: Share of ODA allocated to low-income countries, EU-15**  
(% of country allocated ODA)

Source: OECD (tsdgp330)



### Indicator relevance

The indicator breaks down aid into groups of country of destination to determine whether aid is allocated to the countries where assistance is most urgent. While development cooperation aims to contribute to the eradication of poverty in all developing countries, the European Consensus on Development specifically stresses the necessity to dedicate a high proportion of official development assistance (ODA) to LDCs and OLICs.

### Definition

ODA is defined as net bilateral and imputed multilateral disbursements at current prices for ODA to countries mentioned in the DAC list. Shares are expressed as percentage of the overall ODA amount which can be allocated to specific countries or country groups. The unallocated part of total net ODA (29 % in 2007) is not included. The classification of countries by income groups follows the World Bank definition.



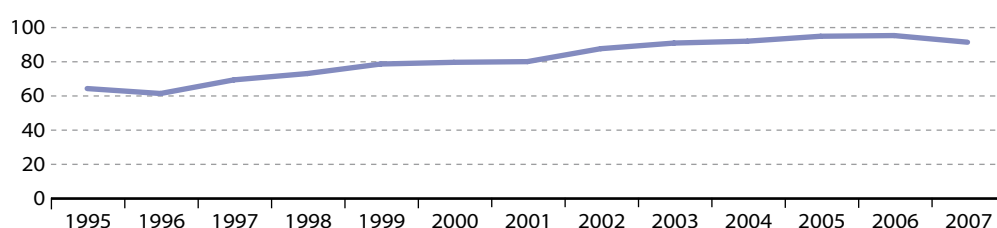
## Share of untied assistance

The percentage of untied bilateral development aid from the EU-15 has increased between 2000 and 2007, levelling off at more than 90 % since 2003



Untied official development assistance (ODA) is ODA for goods and services that may be freely procured in all countries, thus allowing developing countries more freedom in their economic choices than when aid is tied.

There has been progress towards untying a high share of bilateral ODA. The share increased from about 80 % in 2000 to more than 90 % in 2007. This represents a mean annual change rate of 2 %. Already between 1995 and 2000 untying took place at an even higher pace of yearly 4 % on average. In 2007, four of the EU-15 countries had untied 100 % of their overall ODA and another eight countries reached a rate of more than 80 %.



### Analysis

*In 12 of 15 countries the share of untied assistance is over 80 %*

**Figure 9.10:**  
Untied official development assistance, EU-15  
(% of total ODA)

Source: OECD (tsdgp340)

One of the operational objectives and targets of the Sustainable Development Strategy is to 'increase the effectiveness, coherence and quality of EU and Member States aid policies...'. The strategy specifies that one way to do this is untying aid. In 2001, the OECD Development Assistance Committee (DAC) issued a recommendation (and re-issued it in 2008) to its members on untying aid to least-developed and highly indebted poor countries to the greatest extent possible. The commitment to untying aid to least-developed countries was also re-iterated in the Monterrey Consensus on Financing for Development and the Paris Declaration on Aid Effectiveness.

### Indicator relevance

The indicator presents the share of ODA which is untied, that is ODA for which the associated goods and services may be freely procured in substantially all countries. The indicator covers aid from EU countries to the countries mentioned in the DAC list. The shares of untied ODA are calculated based on total bilateral ODA figures that however differ from those presented in the table on bilateral ODA by category. Technical co-operation and administration costs are tied by definition and thus excluded from the figures used here.

### Definition

## Assistance for social infrastructure and services



Assistance from EU-15 dedicated to social infrastructure and services was growing substantially between 2000 and 2007, with a remarkable rise in 2006

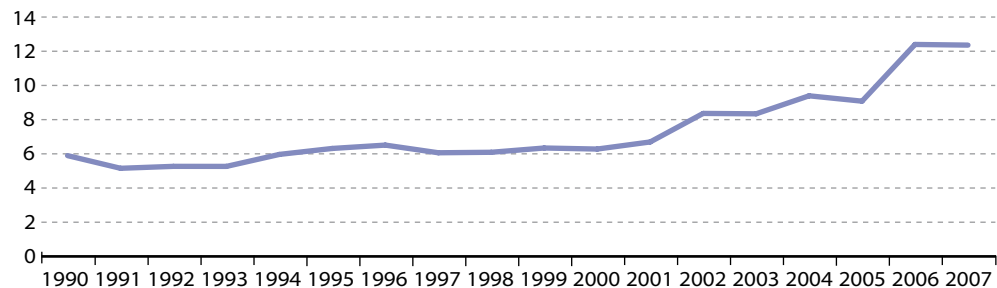
### Analysis

*Assistance for social infrastructure and services has almost doubled since 2000*

ODA for social infrastructure and services has been increasing since 2000, rising from EUR 6.3 billion in 2000 to EUR 12.4 billion in 2007, at an average annual growth rate of 10.2 %. ODA for this category of activities grew more than ten times faster between 2000 and 2007 than in the previous decade which showed a growth rate of 0.6 %. The indicator grew rather steadily from 2000 to 2005 and denoted a big leap in 2006 before levelling off in 2007.

**Figure 9.11:**  
Bilateral ODA  
dedicated to social  
infrastructure and  
services, EU-15  
(EUR 1 000 million)

Source: OECD (tsdgp350)



### Indicator relevance

The indicator describes the fulfilment of ODA commitments by the EU and provides information on the allocation of ODA in different aid categories that offer different opportunities for poverty alleviation and welfare development. Tracking movements of aid by sector of destination allows assessing whether aid is allocated to priority sectors, in conformity with the Millennium Development Goals (MDGs), set for the year 2015, and with EU political commitments. The social dimension of globalisation is recognised as important for development policy. For instance, the Sustainable Development Strategy explicitly mentions the improvement of social standards as desirable <sup>(15)</sup>.

### Definition

The indicator is defined as official bilateral commitments in billions of EUR dedicated to social infrastructure and services. It is calculated at current prices and covers assistance from EU countries to the countries mentioned in the DAC list.



## Assistance for debt relief

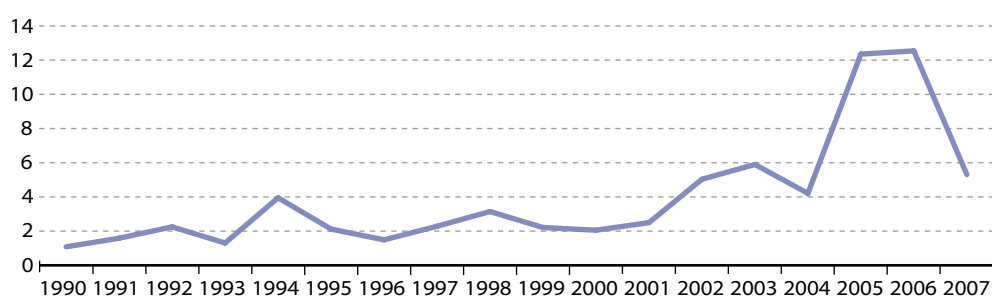
Development assistance from EU-15 dedicated to debt has been growing between 2000 and 2007. After two exceptional years debt relief fell back into ranks in 2007



This indicator measures total bilateral official development assistance (ODA) spent on activities relating to debt (e.g. forgiveness, swaps, buy-backs, rescheduling, refinancing). Debt relief rose from EUR 2 billion in 2000 to EUR 5.3 billion in 2007, growing by 14.6 % on average each year. The growth rate from 2000 to 2007 was more than double the growth rate between 1990 and 2000, when actions related to debt increased by an annual average rate of 6.7 %. In the wake of the debt cancellation programmes of the 2005 World Summit and the Gleneagles G8 summit the amounts spent in 2005 and 2006 proved exceptionally high. The following decrease put 2007 back in line with pre-2005 values.

### Analysis

*Actions related to debt doubled since 2000*



**Figure 9.12:**  
Bilateral ODA  
dedicated to debt,  
EU-15 (EUR 1 000  
million)

Source: OECD  
(tsdgp350)

The indicator describes the fulfilment of ODA commitments and provides information on the allocation of ODA in different aid categories that offer different opportunities for poverty alleviation and welfare development. Tracking movements of aid by sector of destination allows assessing whether aid is allocated to priority sectors, in conformity with the Millennium Development Goals (MDGs), set for the year 2015, and with EU political commitments. The Sustainable Development Strategy recognises debt reduction as one of the ways to increase the quality and effectiveness of aid.

### Indicator relevance

The indicator is defined as official bilateral commitments in billions of EUR dedicated to debt relief. It is calculated at current prices and covers aid from EU countries to the countries mentioned in the DAC list.

### Definition

## CO<sub>2</sub> emissions per inhabitant

CO<sub>2</sub> emissions per capita in the EU have only slightly increased since 2000, while CO<sub>2</sub> emissions of developing countries have significantly increased over the same period

### Analysis

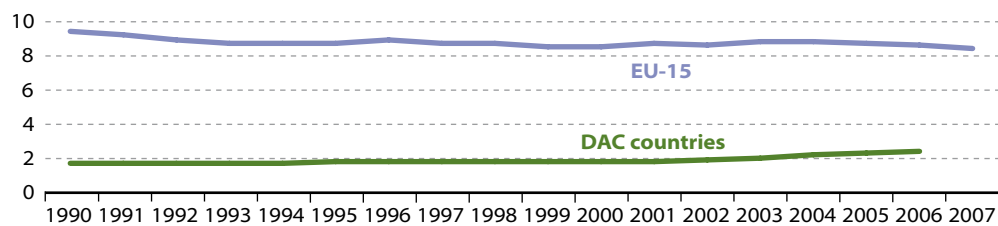
*CO<sub>2</sub> emissions are much higher in the EU than in DAC countries*

The indicator compares the level of CO<sub>2</sub> emissions per capita in the EU with levels in developing countries. While emissions in the EU-27 were 3.6 times higher than in the OECD Development Assistance Committee (DAC) countries in 2006, they were 4.7 times higher in 2000. The gap between the two groups of countries is narrowing, because emissions grew at a much faster rate in DAC countries since 2004. From 1990 to 2000, CO<sub>2</sub> emissions per inhabitant in the EU-27 decreased by 1.0 % per year on average, from 9.4 tonnes in 1990 to 8.5 in 2000. Between 2000 and 2006, emissions remained relatively stable, receding to 8.4 tonnes in 2007.

*Increasing CO<sub>2</sub> emissions in DAC countries mainly due to three fast-growing economies*

At the same time, per capita CO<sub>2</sub> emissions in DAC countries increased by 0.57 % per year on average from 1990 to 2000, increasing from 1.7 to 1.8 tonnes. Between 2000 and 2006, per capita emissions further increased from 1.8 tonnes to 2.4 tonnes. This reflects an average growth rate of 4.9 %. However, the growth in DAC countries' per capita CO<sub>2</sub> emissions is mainly owed to the strong growth rates of the fast-growing developing economies Brazil, India, and China.

**Figure 9.13:** CO<sub>2</sub> emissions per inhabitant in the EU and in developing countries (tonnes per inhabitant)



Source: European Environment Agency, Eurostat, International Energy Agency (tsdgp410)

NB: Data exclude emissions and removals due to land use, land use change and forestry (LULUCF).

### Indicator relevance

One of the objectives of the Sustainable Development Strategy is to 'contribute to improving international environmental governance ... and to strengthening multilateral environmental agreements'. The 2007 progress report <sup>(16)</sup> and the European Consensus on Development also include this objective, the latter specifying that 'with regard to climate change, the Community will focus its efforts on the implementation of the EU action plan on climate change in the context of development cooperation' <sup>(17)</sup>. Over time, a range of environmental measures that aim to improve and protect the global environment have been implemented. CO<sub>2</sub> emissions per inhabitant is one of the indicators for monitoring the achievements on Millennium Development Goal 7 (ensure environmental sustainability).

### Definition

The indicator compares the level of carbon dioxide (CO<sub>2</sub>) emissions per inhabitant in the EU with levels in developing countries, in tonnes per inhabitant. 'Developing countries' refers to the countries and territories on the DAC list for which CO<sub>2</sub> emission data are available.



## Assistance for water supply and sanitation

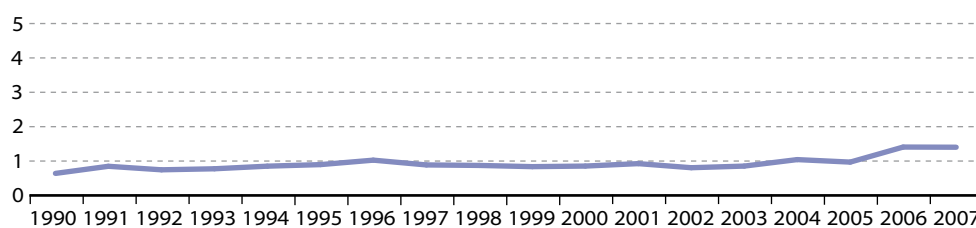
EU-15 development assistance dedicated to water supply and sanitation has increased from 2000 to 2007 rising above one billion in 2006



This indicator reflects bilateral official development assistance (ODA) dedicated to water resources policy, water legislation and management, water supply, use, protection and sanitation. Between 2000 and 2007, EU-15 bilateral ODA in this category increased by 7.7 % per year on average totalling in EUR 1.4 billions in 2007. This is a favourable evolution in the context of the policy laid out in the EU Water Initiative EUWI <sup>(18)</sup>. However in terms of the share in total bilateral ODA the absolute increase only resulted in a return to values of the beginning of the century: activities related to water supply and sanitations represented 4.3 % in 2000, temporarily shrunk down to 2.7 % in 2005 and was back up to 4.2 % in 2007.

### Analysis

*Actions related to water supply and sanitation evolve in line with EUWI objective*



**Figure 9.14:**  
Bilateral ODA  
dedicated to  
water supply and  
sanitation, EU-15  
(EUR 1 000 million)

Source: OECD (tsdgp350)

The indicator provides information on the allocation of ODA for water supply and sanitation in developing countries. The Sustainable Development Strategy underlines the need for implementing the EUWI that was launched in 2002 during the World Summit on Sustainable Development (WSSD). EUWI provides a platform for poverty eradication and health, enhancement of livelihoods, and promotion of sustainable economic development with water as catalyst for peace and security. Its aim is to contribute to the achievement of the MDGs and WSSD targets for drinking water and sanitation, within the context of integrated water resources management. In this context, the EU is committed to contributing to achieve the international goal of halving, by 2015, the proportion of people who are unable to reach or afford safe drinking water and who do not have access to adequate sanitation.

### Indicator relevance

The indicator is defined as official bilateral commitments in billions of EUR dedicated to water supply and sanitation. It is calculated at current prices and covers aid from EU countries to the countries mentioned in the DAC list.

### Definition

## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Official development assistance and related indicators

The data come from the OECD DAC database. DAC statistics are collected annually from the Members of the OECD Development Assistance Committee (DAC). It comprises 22 donor countries and the European Commission. Current DAC EU Members and their respective dates of Membership are as follows:

Austria (1965), Belgium (1961), Denmark (1963), Finland (1975), France (1961), Germany (1961), Greece (1999), Ireland (1985), Italy (1961), Luxembourg (1992), The Netherlands (1961), Portugal (1961-74/1991), Spain (1991), Sweden (1965), United Kingdom (1961), EC (1961).

Other donors that are not part of the DAC are playing an increasing role in development cooperation. Non-DAC EU member donors include within OECD: the Czech Republic, Hungary, Poland, and the Slovak Republic; outside OECD: all remaining EU Member States (Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta and Slovenia).

In order to ensure the comparability of country groupings among indicators from various sources, a single grouping of countries has been used in the whole global partnership theme. This grouping is based on the DAC list of recipient countries. 'Developing countries' are countries listed in this document. The list is reviewed every three years. The World Bank defined some thresholds in order to cluster countries by level of income. This definition has been used for income groups. The 'DAC list of ODA recipients, effective from 2006 for reporting on 2005, 2006 and 2007' which has been used throughout this report countries are clustered by income groups: 50 least-developed countries (LDCs), 18 other low-income countries (OLICs), 48 low-middle-income countries (LMICs), 36 upper-middle-income countries (UMICs); for classification of countries see detailed methodological notes or here: [www.oecd.org/dac/stats/daclist](http://www.oecd.org/dac/stats/daclist)

Low-income countries are least-developed countries and other low-income countries together.

The indicators are compiled as follows:

Disbursements represent the actual international transfer of financial resources. They may be recorded at one of several stages: provision of goods and services, placing of funds at the disposal of the recipient in an earmarked fund or account, withdrawal of funds by the recipient from an earmarked fund or account, payment by the donor of invoices on behalf of the recipient, etc. The disbursement mechanism used tends to vary as a function of the type of financial (or technical) co-operation flow involved. Internal development-related expenditures (e.g. administrative costs, development research in the donor country) are measured at the point at which payment is made by the official sector. Disbursements may be recorded gross (the actual amounts disbursed) or net (i.e., less repayments of principal in respect of earlier loans).

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They include

transactions with national and international nongovernment organisations (NGOs) active in development and other development-related transactions such as interest subsidies, spending on promotion of development awareness, debt reorganisation and administrative costs.

For the indicator foreign direct investment, direct investment is a category of international investment made by a resident entity in one economy (direct investor) with the objective of establishing a lasting interest in an enterprise resident in an economy other than that of the investor (direct investment enterprise). 'Lasting interest' implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management of the direct investment enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated.

The categories of aid presented refer to the following:

- social infrastructure and services: this main category relates essentially to efforts to develop the human resource potential of aid recipients. It comprises education, health, population policies and programmes and reproductive health, water supply and sanitation, government and civil society, other social infrastructure and services;
- action relating to debt: this main heading groups all actions relating to debt (forgiveness, swaps, buy-backs, rescheduling, refinancing);
- water supply and sanitation: this heading includes water resources policy, planning and programmes, water legislation and management, water resources development, water resources protection, water supply and use, sanitation (including solid waste management) and education and training in water supply and sanitation.

More information is available at: <http://www.oecd.org>

### Imports from developing countries

All data concerning the following indicators: EU imports from developing countries, by income group and by group of products and EU imports from least-developed countries, by group of products come from Eurostat, Comext database. The external trade sustainable development indicators are based on the EU imports of goods from developing countries. 'Imports' means all inward flows recorded at the frontier of the reporting country, which implies that only extra-EU imports are considered when calculating the indicators for the EU as a whole. Extra-EU imports are recorded when the goods are placed under the customs procedures. Goods in transit, placed in a customs warehouse or given temporary admission are not recorded. 'Goods' means all movable property including electric current. The external trade sustainable development indicators refer to the total EU imports of goods but also to EU imports of specific product groups based on the Standard International Trade Classification (SITC rev4) or the Harmonised Commodity Description and Coding System (HS 2006). The 'DAC list of ODA recipients, effective from 2006 for reporting on 2005, 2006 and 2007' has also been

used for the calculation of 2008 data in order to guarantee comparability with all other DAC-related indicators.

### Subsidies for EU agriculture

The domestic support for agriculture is regulated in the Agriculture Agreement of the WTO. In WTO terminology, subsidies in general are identified by 'boxes' which are given the colours of traffic lights: green (permitted), amber (slow down — i.e. be reduced), red (forbidden). The Agriculture Agreement has no red box, although domestic support exceeding the reduction commitment levels in the amber box is prohibited; and there is an additional blue box for subsidies that are tied to programmes limiting production. The green box must not distort trade nor involve price support and have to be government-funded. Thus, all domestic support measures considered to distort production and trade (with some exceptions) fall into the amber box, which is defined in Article 6 of the Agriculture Agreement as all domestic support except those in the blue and green boxes. They are however subject to limits: 'de minimis' minimal supports are allowed (5 % of agricultural production for developed countries, 10 % for developing countries). The reduction commitment in the Amber Box is expressed in monetary terms as a ceiling for the Aggregated Measurement of Support (AMS). The agreed AMS ceiling for each year must not be exceeded by current AMS in the respective year.

34 WTO members among them the European Union have commitments to reduce their trade-distorting domestic supports in the amber box.

### CO<sub>2</sub> emissions per inhabitant

For EU Member States, this indicator is compiled using the data on CO<sub>2</sub> emissions (excluding land use change and

forestry) provided in the official submission of the European Commission to the UNFCCC. Per capita emissions are calculated using Eurostat population statistics.

For the DAC countries, CO<sub>2</sub> emissions from fuel combustion are calculated by the International Energy Agency (IEA) using IEA energy data and the default methods and emission factors from the Revised 1996 IPCC Guidelines for national greenhouse gas inventories (IPCC/OECD/IEA Paris, 1997). Per capita emissions are calculated using IEA population data. IEA data were extracted from the IEA statistical databases: energy balances of OECD countries, energy statistics of OECD countries and energy technology research and development.

The following 90 DAC countries were included in the calculation: Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Cambodia, Cameroon, Chile, China, Colombia, Congo (Brazzaville), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Democratic People's Republic of Korea, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Ethiopia, former Yugoslav Republic of Macedonia, Gabon, Georgia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Lebanon, Libya, Malaysia, Mexico, Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Nigeria, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Saudi Arabia, Senegal, Serbia and Montenegro, South Africa, Sri Lanka, Sudan, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Ukraine, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe. Data were unavailable for the remaining countries.

## Chapter notes

- (1) United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, Rio de Janeiro 1992, Principle 5.
- (2) European Commission Communication, *Progress Report on the Sustainable Development Strategy 2007*, COM(2007) 642., p. 2.
- (3) European Commission Communication, *Towards a global partnership for sustainable development*, COM(2002) 82.
- (4) United Nations, *Plan of Implementation of the World Summit on Sustainable Development*, Johannesburg, 2002.
- (5) High-Level Forum on Aid Effectiveness, *Paris Declaration on aid effectiveness*, Paris, 2005.
- (6) High-Level Forum on Aid Effectiveness, *Accra agenda for action*, Accra, 2008.
- (7) United Nations, *Monterrey consensus of the international conference on financing for development. The final text of agreements and commitments adopted at the International Conference on Financing for Development Monterrey, Mexico, 18-22 March 2002*, United Nations, New York, 2003.
- (8) United Nations, *Doha declaration on financing for development: outcome document of the follow-up international conference on financing for development to review the implementation of the Monterrey consensus*, Doha, 2008.
- (9) European Commission Communication, *Policy coherence for development: Accelerating progress towards attaining the Millennium Development Goals*, COM(2005) 134.
- (10) European Commission Communication, *Policy coherence for development: Accelerating progress towards attaining the Millennium Development Goals*, COM(2005) 134.
- (11) World Trade Organization, *Doha Development Agenda*, 2001.
- (12) Joint declaration by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission on the development policy of the European Union, *The European Consensus*, para. 40.
- (13) Joint declaration by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission on the development policy of the European Union, *The European Consensus*.
- (14) United Nations, *Programme of action for the least-developed countries for the decade 2001-2010*, adopted by the Third United Nations Conference on the Least Developed Countries Brussels, Belgium, 14-20 May 2001.
- (15) European Council, *Review of the EU Sustainable Development Strategy (EU SDS) - Renewed Strategy*, 2006, 10117/06, p. 21.
- (16) European Commission Communication, *Progress Report on the Sustainable Development Strategy 2007*, COM(2007) 642.
- (17) Joint declaration by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission on the development policy of the European Union, *The European Consensus*.
- (18) EUWI EU Water Initiative, *2009 Annual report: summary*, 2009.





# 10

## Good governance

*'To promote coherence between all European Union policies and coherence between local, regional, national and global actions in order to enhance their contribution to sustainable development'*

The trends observed in the good governance theme since 2000 have been mixed. While there have been positive trends in e-government availability and usage as well as in the transposition of Community law, there have been negative trends in the number of new infringement cases brought before the European Court of Justice. Voter turnout in national parliamentary elections has fallen and is still lower for the EU Parliament. Moreover, the ratio of environmental to labour taxes has decreased and thus, a general shift towards a higher share of environmental taxes in total tax revenues has not been achieved.

**Table 10.1: Evaluation of changes in the good governance theme (EU-27, from 2000)**

Level 1	Level 2	Level 3
	<b>Policy coherence and effectiveness</b>	
	☁️ Infringement cases*	: Citizens' confidence in EU institutions
		☀️ Transposition of Community law**
	<b>Openness and participation</b>	
	☁️ Voter turnout	☀️ E-government availability**
		☀️ E-government usage***
	<b>Economic instruments</b>	
	☁️ Environmental taxes compared to labour taxes	

\* EU-25, from 2005

\*\* EU-25, from 2004

\*\*\* From 2005

**LEGEND:**

☀️ clearly favourable change/on target path

☁️ moderately unfavourable change/far from target path

☁️ no or moderately favourable change/close to target path

☁️⚡ clearly unfavourable change/moving away from target path

: contextual indicator or insufficient data



## Overview of main changes

### Policy coherence and effectiveness

*The European Parliament is the most trusted of the main EU institutions*

In 2008, slightly more than half of EU-27 citizens said that they trusted the European Parliament; making it the most trusted of the main EU institutions. Fewer citizens reported that they trusted the European Commission and the Council of the EU.

*The number of infringement cases has increased*

Between 2005 and 2008, the number of infringement cases in the EU-25 increased from 170 to 207. Three-quarters of all actions for failure of the Member States to fulfil their obligations in 2008 concerned just three policy areas: internal market; environment, health and consumer protection; justice and home affairs.

*EU-27 is right on target in the transposition of Community law*

In 2001, the European Council set the target of a 98.5 % transposition rate of Community law by national authorities. Between 2004 and 2008, the transposition rate in the EU-25 has increased, but was just below target in 2008. Nevertheless, several policy sectors have been below the EU target rate over the same period.

### Openness and participation

*Voter turnout has decreased in national elections and is lower in EU parliamentary elections*

Voter turnout in national parliamentary elections has decreased in the EU-27 between 2000 and 2008. Generally, there has been stronger participation in national elections than in EU parliamentary elections.

*E-government availability and usage have been increasing*

E-government availability of basic public services has been steadily increasing in the EU-25 over the period 2004 and 2007. E-government usage by individual citizens has also increased in the EU-27 between 2005 and 2008, although a decrease is observable from 2007 to 2008. Both the availability of online public services and e-government usage show differences between Member States.

*The ratio of environmental to labour taxes has decreased*

### Economic instruments

The ratio of environmental to labour taxes has decreased in the EU-27 between 2000 and 2007, reflecting a shift from environmental to labour taxes. Both the share of environmental taxes and the share of labour taxes have decreased in total tax revenues.

## Background

*Good governance is an important part of sustainable development*

Good governance plays a central role for delivering sustainable development, and its importance has been addressed by various scholars <sup>(1)</sup> and international organisations <sup>(2)</sup>. Good governance is a normative prescription of how to steer and guide societies. The concept originates from international development agencies. Of particular relevance to sustainable development are horizontal policy integration (coherence between different sectoral policies, such as economic, social and environmental policy), multi-level cooperation (coherence between the European, national and sub-national authorities) and participation (broad consultation of citizens and societal stakeholders).

Faced with complex challenges, in 2000 the European Commission identified 'promoting new forms of European governance' as one of its four strategic objectives <sup>(3)</sup>, and, based on this

objective, the Commission published the White Paper on European Governance in 2001 (see Box 10.1). The White Paper outlined a proposal for change, defining five principles of good governance for the EU: (1) openness; (2) participation; (3) accountability; (4) effectiveness; and (5) coherence. While principles 1-3 refer to processes and procedures, principles 4-5 refer to the outcomes of these processes. Reports on the implementation of the White Paper were published by the European Commission in 2002 <sup>(4)</sup> and 2004 <sup>(5)</sup>.

The first EU Sustainable Development Strategy adopted at the European Council meeting in Gothenburg in 2001 <sup>(6)</sup>, included a new approach to policy-making that comprised issues such as horizontal policy integration, multi-level cooperation, and suggestions for better regulation (effectiveness, timeliness). In 2005, the European Commission issued a review of the first strategy with the aim to further develop it <sup>(7)</sup>. The review report proposed several key objectives and policy guiding principles which were largely approved by the Council of the European Union at its meeting to decide on a renewed strategy in June 2006.

The renewed Sustainable Development Strategy (EU SDS) of 2006 addresses good governance in various policy guiding principles (see Box 10.2). To achieve its objectives, the Strategy sets out an approach to better policy-making based on better regulation <sup>(8)</sup> and integration of sustainable development criteria into policy-making at all government levels. To this end, the EU SDS proposes to base all major policy decisions on high-quality impact assessments, to use the full range of policy instruments in the implementation of policies and to shift taxation from labour to resource and energy consumption and pollution. As such, the principle of 'good governance' outlines how the objectives, targets and actions of the strategy are to be developed, implemented and monitored at the EU and Member States level in order to achieve coherence of policies.

In 2007, the first progress report on the EU SDS was published by the European Commission <sup>(9)</sup>. In this report, the Commission reflected on the governance approach outlined in the strategy and remarked that, in particular, ensuring coherence across policy areas at all levels of governance and working towards the convergence between long- and medium-term objectives are major challenges.

*The White Paper on European Governance defined five good governance principles*

*First EU Sustainable Development Strategy included a new approach to policy-making*

*Good governance in the renewed Sustainable Development Strategy*

*Major good-governance challenges identified in the first progress report*

### Box 10.1: White Paper on European Governance – Proposals for change and principles of good governance

The 2001 White Paper on European Governance includes 'proposals for change' aimed to renew the Community method by following a less top-down approach and by complementing its policy tools more effectively with non-legislative instruments:

- **Better involvement:** the EU institutions and the Member States should be more open and communicate more actively with the general public on European issues.
- **Better policies, regulation and delivery:** the EU should pay constant attention to improving the quality, effectiveness and simplicity of regulatory acts.
- **The EU's contribution to global governance:** a successful implementation of governance reform in the EU is a precondition for making a case for credible change in governance on the global level.
- **Refocused policies and institutions:** the EU should identify more clearly its long-term objectives (with the overall ob-

jective of sustainable development) and the EU institutions should concentrate on their core tasks.

Five principles underpin good governance and the changes proposed in the White Paper:

1. **Openness:** EU institutions should work more openly.
2. **Participation:** the quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain.
3. **Accountability:** roles in the legislative and executive processes must be clearly defined.
4. **Effectiveness:** policies must be effective and timely; delivering what is needed on the basis of clear objectives.
5. **Coherence:** policies and actions must be coherent and easily understood.

### Box 10.2: Objectives and principles related to good governance in the EU Sustainable Development Strategy

Good governance issues are addressed in various sections of the EU SDS, namely in the policy guiding principles, the approach to better policy-making and the section on financing and economic instruments.

#### Policy guiding principles (selection relevant to this chapter):

- *Open and democratic society*: citizens' rights of access to information and ensured access to justice; adequate consultation and participatory channels for all interested parties.
- *Involvement of citizens*: enhance the participation of citizens in decision-making; promote education and public awareness of sustainable development; inform citizens about their impact on the environment and their options for making more sustainable choices.
- *Involvement of businesses and social partners*: enhance the social dialogue, corporate social responsibility and private-public partnerships.
- *Policy coherence and governance*: promote coherence between all European Union policies and coherence between national, regional and local actions for sustainable development.
- *Policy integration*: promote integration of economic, social

and environmental policies so that they are coherent and mutually reinforcing.

- *Make polluters pay*: ensure that prices reflect the real costs of consumption and production activities to society and that polluters pay for the damage they cause to human health and the environment.

#### Approach to better policy-making:

- Policy-making should be based on *better regulation* and on the principle that *sustainable development is to be integrated into policy-making at all levels*.
- All EU institutions should ensure that major policy decisions are based on proposals that have undergone a high quality *Impact Assessment (IA)*.

#### Financing and economic instruments:

- The EU will seek to use the *full range of policy instruments* in the implementation of its policies, including appropriate economic instruments.

Member States should consider further steps to *shift taxation from labour to resource and energy consumption and/or pollution*.

## Potential linkages

### **Good governance theme is linked to all policy issues and indicators**

The good governance theme is linked to all policy issues and indicators included in this report. Governance deals with managing, steering and guiding action in the realm of public affairs, especially in relation to public decision-making. The principle of 'good governance' outlines how the objectives, targets and actions of the renewed strategy are to be developed, implemented and monitored at the EU and country level in order to achieve coherent policies.

### **Interlinkages between good governance issues**

Several interlinkages are apparent within the issues covered in the good governance theme. Firstly, confidence in the main EU institutions may affect the voter turnout in EU parliamentary elections. Secondly, there is a link between new infringement cases brought before the European Court of Justice and the transposition of Community law by the Member States. Thirdly, e-government online availability and usage by individual citizens are linked to more open access to public authorities.

### **There is an important link between the indicator 'environment and labour taxes' and four other themes**

There is a direct link between good governance and the issues raised in the other themes of this report, particularly the environmental and labour taxes indicator. The EU SDS proposes to shift taxation from labour to environmental taxes. Environmental taxes are taxation on resource and energy use and, therefore, the indicator can be linked to sustainable consumption and production (particularly to the sub-themes 'resources and waste' and 'consumption patterns'), climate change and energy, sustainable transport and natural resources.

### Further reading

European Commission, *Taxation trends in the European Union: data for the EU Member States and Norway*, 2009 edition, Office for Official Publications of the European Union, Luxembourg, 2009

Capgemini, *The user challenge: Benchmarking the supply of online public services. 7th Measurement*, European Commission, Brussels, 2007

Commission communication, *Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development*, COM(2009) 400

Commission communication, *Strategic report on the renewed Lisbon strategy for growth and jobs: Launching the new cycle (2008-2010). Keeping up the pace of change*, COM(2007) 803

Commission communication, *Europe's Digital Competitiveness Report: Main achievements of the i2010 strategy 2005-2009*, COM(2009) 390

European Commission, *European governance – A White Paper*, COM(2001) 428

## Citizens' confidence in EU institutions

The European Parliament is the most trusted among the EU institutions, followed by the European Commission and the Council of the European Union. The trust levels for these main EU institutions in the EU-27 were lower in 2008 than in 2007

### Analysis

*More than half of citizens asked trust the European Parliament*

This indicator expresses the level of confidence (or trust) that citizens have in the three main EU institutions: Council of the European Union, European Parliament, and European Commission.

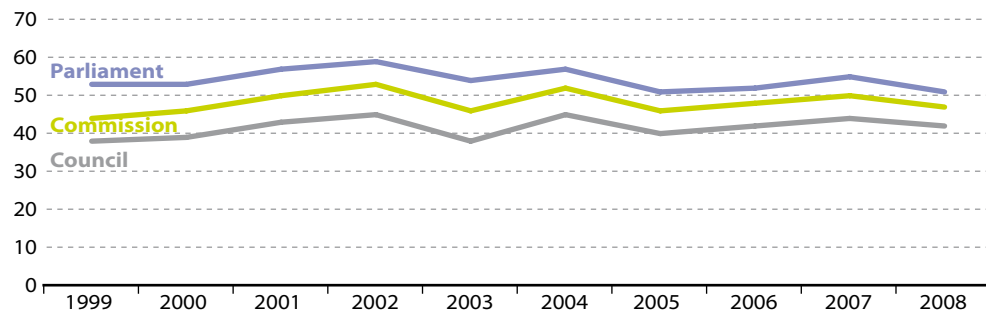
In 2008, slightly more than half of EU-27 citizens said that they trusted the European Parliament (51 %), making it the most trusted among the main EU institutions. Fewer citizens said that they trusted the European Commission (47 %) and the Council of the EU (42 %). The trust levels in 2008 have decreased in the EU-27 compared to the levels in 2007: a drop of four percentage points for the European Parliament, three percentage points for the Commission, and two percentage points for the Council.

*Confidence develops in parallel for EU institutions over time*

Confidence in the three main EU institutions has mostly developed in parallel over time. Based on 2007 values, the levels of confidence correspond to the degree of public awareness of these EU institutions. Public awareness has been highest for the European Parliament (partly due to citizens' participation in the European elections), followed by the Commission and the Council <sup>(10)</sup>.

**Figure 10.1:**  
Level of citizens' confidence in EU institutions, EU (%)

Source: European Commission services (tsdgo510)



NB: Data are for the EU-15 until 2003, for the EU-25 from 2004 to 2006 and for the EU-27 for 2007 and 2008.

### Indicator relevance

The indicator is related to several policy guiding principles highlighted in the Sustainable Development Strategy (e.g. open and democratic society, involvement of citizens). Moreover, confidence in EU institutions is an important supporting factor for implementing the good governance principles outlined in the White Paper <sup>(11)</sup> (particularly openness and accountability).

### Definition

The level of citizens' confidence in the main EU institutions expresses the share of positive opinions held by citizens of the EU Member States (i.e. those who declare that they tend to trust EU institutions). Potential replies to the question on the level of confidence in EU institutions include 'tend to trust', 'tend not to trust' and 'don't know'. Trust is not precisely defined and could thus leave some room for interpretation by the interviewed citizens.



## Infringement cases



The number of infringement cases in the EU-25 has increased from 170 to 207 between 2005 and 2008. The situation among policy areas varies, and just three predominate

Between 2005 and 2008, the number of infringement cases in the EU-25 increased by an annual average growth rate of 6.8 %. However, the number of cases varied substantially from one year to the next. In 2008, 207 cases, where a Member State had failed to fulfil its obligations, were brought before the European Court of Justice. This marks a slight decrease compared to 2007 with 212 cases.

The situation varies considerably between the different policy areas and three areas in particular have predominated: internal market; environment, health and consumer protection; and justice and home affairs. In 2008, these three areas out of eleven made up 72 % of all actions for failure. 71 actions were linked to the internal market, 49 actions to environment, health and consumer protection, and 31 actions to justice and home affairs.

### Analysis

72 % of cases concern internal market, environment, health and consumer protection, and justice and home affairs

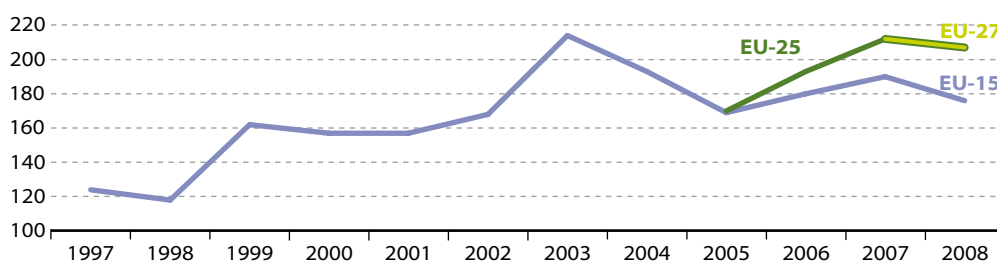


Figure 10.2: New infringement cases

Source: Court of Justice of the European Communities (tsdgo210)

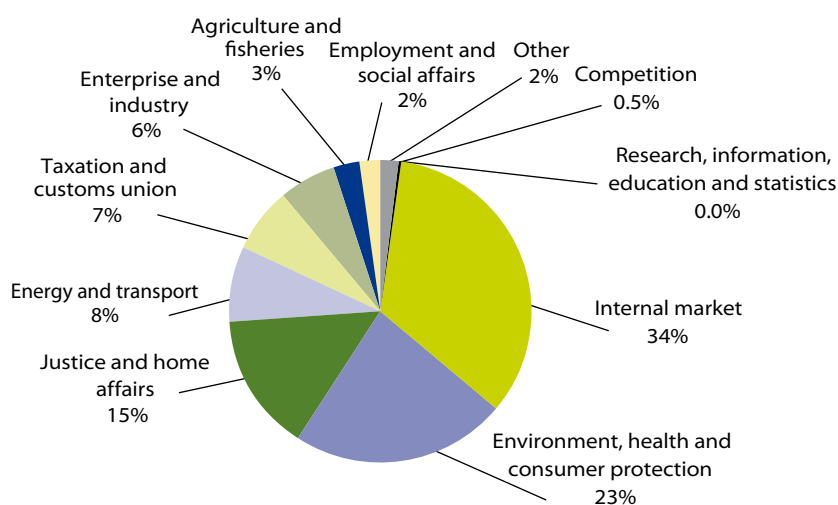


Figure 10.3: New infringement cases, by policy area, EU-27, 2008 (%)

Source: Court of Justice of the European Communities





**Indicator relevance** The indicator provides a measure of the enactment of Community law at the national level, and gives some insight into areas that cause difficulties to Member States. As one of the guiding principles of the Sustainable Development Strategy is to promote coherence at all levels of political action, the indicator illustrates one aspect of policy coherence between the EU and the Member States.

**Definition** This indicator measures the total number of new actions brought before the European Court of Justice for failure of a Member State to fulfil its obligations. The referral to the Court is the last stage of the infringement procedure after the letter of formal notice and the reasoned opinion. The breakdown by policy area concerns the number of direct actions, which include the actions for failure to fulfil obligations but also actions for annulment, failure to act, damages or on arbitration clauses.



## Transposition of Community law

The implementation of Community law into national law has slightly increased in the EU-25 between 2004 and 2008. The transposition level has been above or almost on the target rate since 2005, but has remained below in several policy sectors



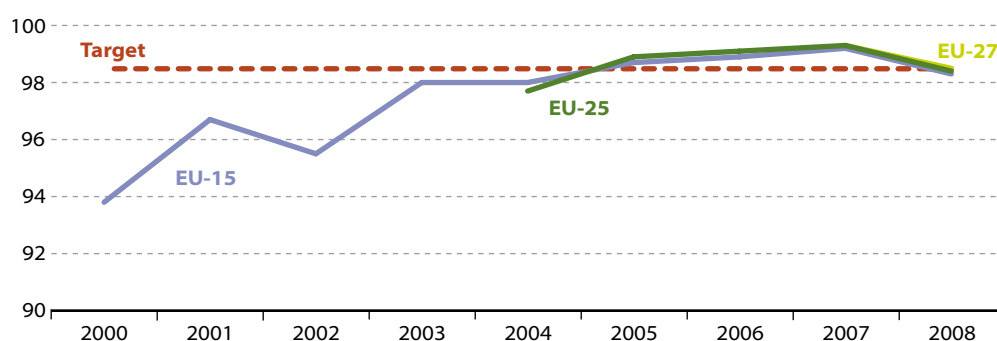
The indicator measures the percentage of EU directives for which measures of implementation in national law have been undertaken. In 2001, the European Council set the target of a 98.5 % rate of transposition of Community law by national authorities. Between 2004 and 2008, the share of implemented directives in the EU-25 increased on average by 0.15 percentage points per year. Between 2007 and 2008, the transposition level decreased in the EU-27 from 99.3 % to 98.5 %, but has remained right on target.

All policy sectors have now reached transposition rates above 95 % and these rates have increased since 2004, with the exception of energy and transport, and taxation and customs union. In 2008, the transposition levels were below the Community-wide target of 98.5 % in six sectors.

### Analysis

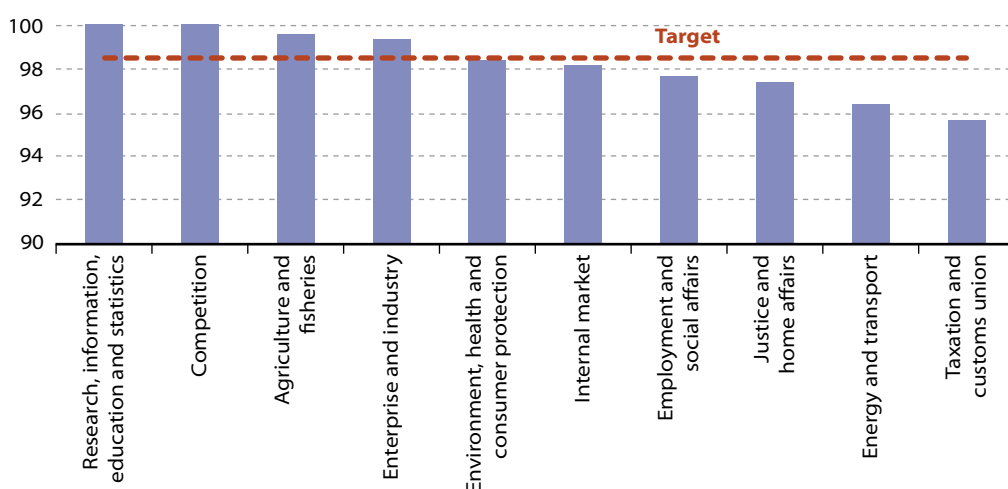
*Transposition of Community law was right on target in EU-27 in 2008*

*Six out of ten policy sectors have been below target*



**Figure 10.4:** Transposition of Community law (%)

Source: European Commission services (tsdgo220)



**Figure 10.5:** Transposition of Community law, by policy area, EU-27, 2008 (%)

Source: European Commission services (tsdgo220)



**Indicator relevance** The indicator can be considered as a measure of policy coherence between the EU and its Member States, which is one of the principles included in the Sustainable Development Strategy and a principle outlined in the White Paper on governance.

**Definition** The indicator measures the progress in the notification by Member States to the European Commission of the national measures for the transposition of directives in all sectors. It is calculated as the percentage of directives for which measures of enactment have been notified among the total number of directives applicable on the reference date.



## Voter turnout

Participation in national parliamentary elections in the EU-27 has decreased between 2000 and 2008. However, the turnout has been generally higher than in EU elections



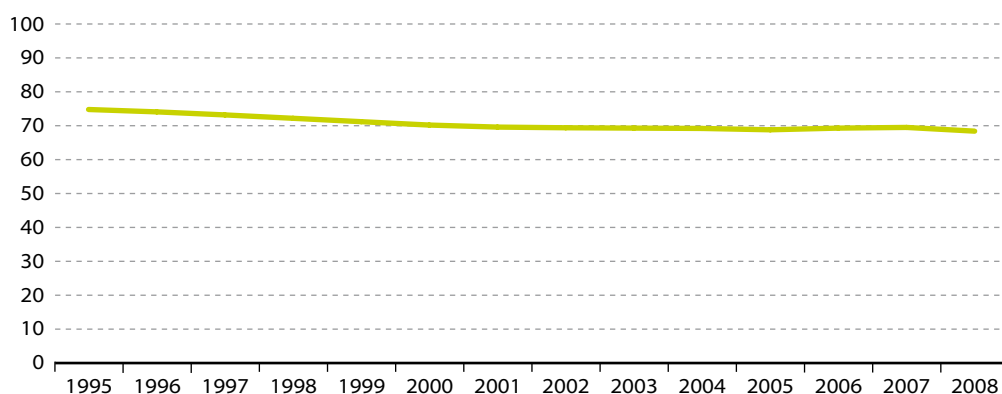
When comparing the voter turnout in national parliamentary elections in the EU-27 between 2000 and 2008, participation has slightly decreased by an annual average rate of 0.3 % from 70.3 % to 68.5 %. It has decreased in most Member States during this time period, but has remained above 50 % in all countries except for one.

Participation in EU parliamentary elections has been considerably lower than in national elections. In 2009, voter turnout in the EU elections has been 43 % and has thus been lower than in the previous elections in 2004 with 45.5 % and 1999 with 49.5 %. Looking at the results for the 2009 EU election in the individual Member States, turnout remained below 50 % in 18 countries, and was above 50 % in nine countries. The poorer voting record for the EU parliament than for national parliaments – more than 20 % less in 18 countries – may reflect a lack of information on EU matters among EU citizens<sup>(12)</sup> as well as the fact that EU elections may not be perceived by citizens as having much impact on national (and personal) interests.

### Analysis

*Voter turnout in national parliamentary elections has decreased*

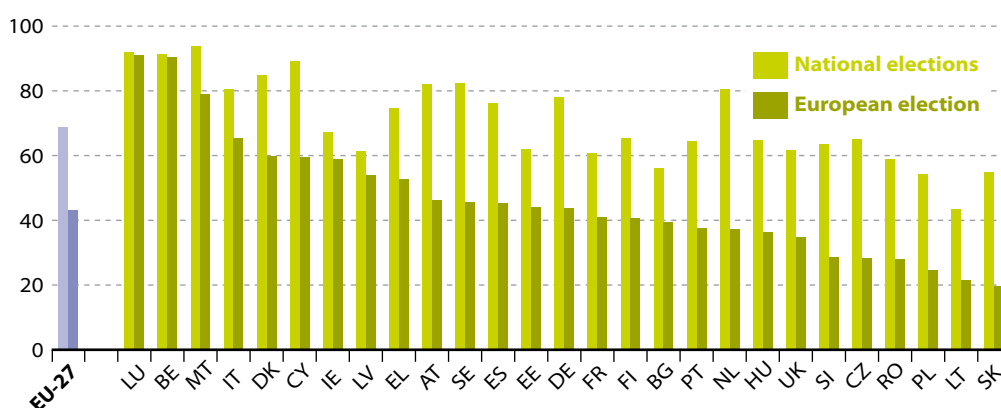
*Participation in EU elections has been considerably poorer than in national elections*



**Figure 10.6: Voter turnout in national parliamentary elections, EU-27 (%)**

Source: International Institute for Democracy and Electoral Assistance (IDEA) (tsdgo310)

NB: Eurostat estimates.



**Figure 10.7: Voter turnout in national and 2009 EU parliamentary elections (%)**

Source: International Institute for Democracy and Electoral Assistance (IDEA), European Parliament (tsdgo310)

NB: The EU-27 figure for national elections is a Eurostat estimate. Data for national elections refer to the latest year in which national parliamentary were held. For all countries, this year lies between 2008 and 2004.



**Indicator relevance** Although no linear relationship exists between voter turnout and democratic development, voter turnout is a key aspect of citizens' participation in public affairs at EU and national level. The indicator is related to two policy guiding principles of the Sustainable Development Strategy: open and democratic society and involvement of citizens.

**Definition** Both indicators measure the percentage of the population who cast a vote (or 'turn out') at an election, calculated by dividing the number of votes by the number of names on the voters' register, expressed as percentage of the total population which has the right to vote. The turnout also includes those who cast blank or invalid votes. The two indicators are not fully comparable as they refer to different dates of elections and to different populations of reference.



## E-government availability

The offer of on-line public services has steadily increased in the EU-25 since 2004, reaching 62 % in 2007. It varies however considerably among Member States



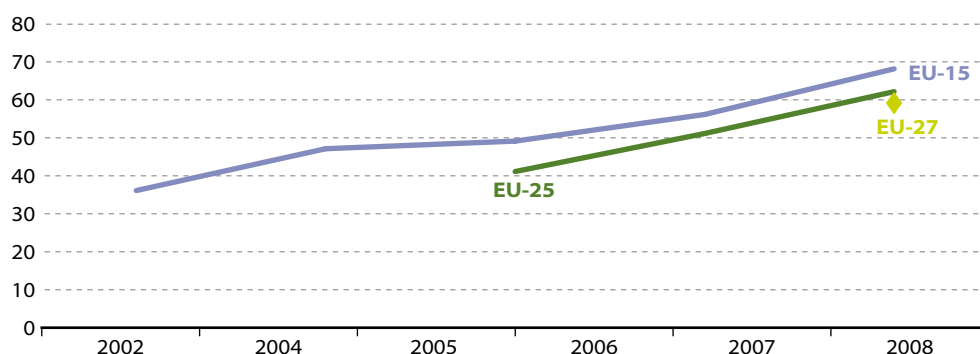
E-government on-line availability is widespread in the EU. In the EU-25 the average annual increase was as high as 14.8 %. The value for the EU-27 in 2007 shows an on-line availability of public services of 59 %. The period between 2004 and 2007 has witnessed an increase in 22 countries, no change in two and a decrease in only one.

The quantity of on-line services offered varies considerably among Member States. In 2007, six countries had between 75 and 100 % of basic public services fully available online, nine offered between 35 and 50 %, and two only between 15 and 25 %. In the latest review of the EU's 'i2010' policy framework <sup>(13)</sup>, the Commission presented progress in the areas of e-government and e-health and concluded that 'Europe continues to make progress in the supply of online public services and thereby is making major steps towards the goals of the Lisbon Strategy and the i2010 eGovernment action plan.'

### Analysis

*The on-line availability of public services in the EU is 59 %*

*16 Member States offer 50 % or more basic services online*



**Figure 10.8:** E-government on-line availability (%)

Source: Eurostat <sup>(14)</sup> (tsdgo320)

E-government availability provides an indication of access to more information for citizens and more open public administrations. It is, therefore, connected to the governance principles of the Sustainable Development Strategy to guarantee citizens' access to information and also relates to the objectives of the Lisbon Strategy <sup>(15)</sup>, the eEurope action plan <sup>(16)</sup>, and the 'i2010' initiative <sup>(17)</sup>.

### Indicator relevance

E-government availability shows the percentage of the 20 basic services which are fully available online, i.e. for which it is possible to carry out full electronic case handling. For example, if in a country, 13 of the 20 services were measured as being 100 % available online, and one service was not relevant (e.g. does not exist); the indicator will be 13/19 which represents 68.4 %. Measurement is based on a sample of URLs of public websites agreed with the Member States as relevant for each service.

### Definition



## E-government usage



The use of on-line public services increased significantly in the EU-27 from 2005 to 2008, but varied considerably between countries. Overall, close to a third of EU citizens used e-government in 2008

### Analysis

*E-government usage is generally on the rise, but fell in 2008*

*Usage varies between 8 and 53 % among Member States*

*E-government availability and usage are not related*

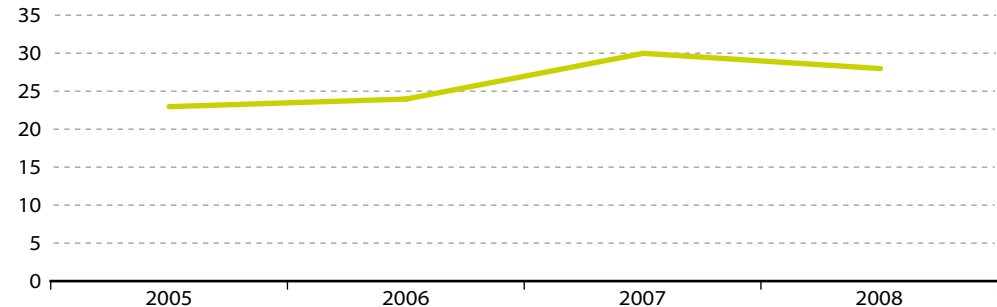
Between 2005 and 2008, e-government usage by individual citizens in the EU-27 has increased at an annual average growth rate of 6.8 %. However, there has been some fluctuation in the usage during these years, and compared to 2007, the 2008 value has fallen by two percentage points.

In 2008, more than 50 % of the people used the internet for interaction with public authorities in three countries (Netherlands, Finland and Sweden). In 14 Member States, individual usage was between 50 and 20 %, and in ten it was below 20 %. Therefore, similar to e-government availability, e-government usage varies substantially between Member States. One reason for this difference may be that some have lower coverage of high-speed internet connections and generally lower degrees of computer access.

There is no direct connection between the offer of online public services and e-government usage. In 2007, e-government availability in the EU-27 was 59 %, while e-government usage was 30 %. Only some States, such as Sweden, Finland, the Netherlands and Denmark have reached a high level of both e-government availability and e-government usage.

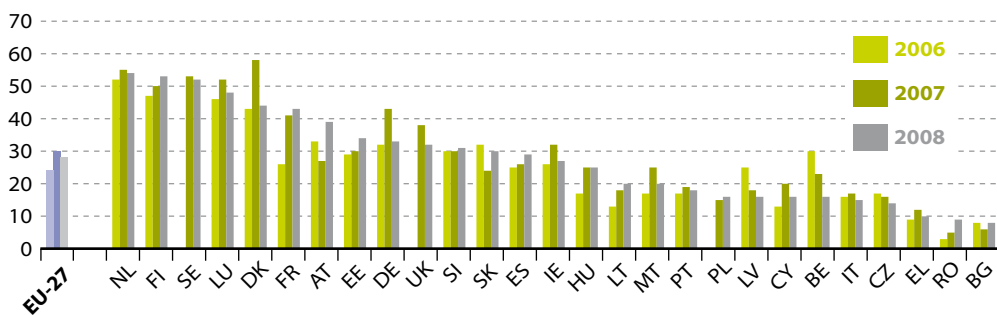
**Figure 10.9:**  
E-government usage by individuals, EU-27 (%)

Source: Eurostat (tsdgo330)



**Figure 10.10:**  
E-government usage by individuals, by country (%)

Source: Eurostat (tsdgo330)



NB: 2006 data are missing for Poland, the United Kingdom, and Sweden.



One of the policy guiding principles in the Sustainable Development Strategy is the involvement of citizens. The indicator measures the use of basic online services; however, it does not provide a concrete indication of more specific ‘democratic’ usage of the internet (e.g. on-line discussion forums, electronic voting, etc). Generally, the Commission intends to foster direct communication between citizens and policy-makers <sup>(18)</sup>, which is also outlined in the i2010 initiative <sup>(19)</sup>.

### Indicator relevance

E-government usage by individuals measures the percentage of individuals aged 16 to 74 who have used the Internet in the last three months, for interaction with public authorities (i.e. having used the Internet for one or more of the following activities: (i) obtaining information from public authorities websites; (ii) downloading official forms; (ii) sending completed forms).

### Definition

## Environmental taxes compared to labour taxes



The ratio of environmental to labour taxes decreased slightly in the EU-27 from 2000 to 2007. By and large, there has been a slight shift from environmental to labour taxes

### Analysis

*The ratio has slightly shifted to the disadvantage of environmental taxes*

*The share of environmental taxes has declined*

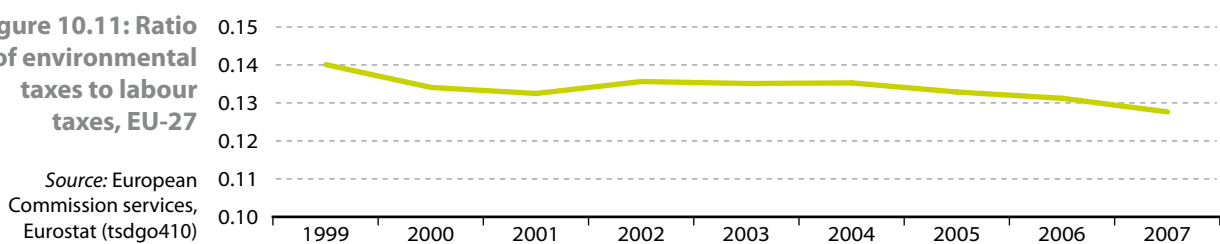
*The share of labour taxes has also decreased*

The ratio of environmental to labour taxes has decreased from 0.134 in 2000 to 0.127 in 2008 with an annual average decrease of 0.7 %. There has therefore been a slight shift from environmental taxes to labour taxes.

The share of environmental taxes in total tax revenues fluctuated slightly between 2000 and 2007. It peaked in 2002 and 2003 at a level of 6.9 % and had its lowest value in 2007 at 6.2 %. Looking at the share of environmental taxes in the individual countries, only two show a share above 10 % of total tax revenue, while in eight the share has been below the EU-27 average of 6.2 %. The decline in the share of environmental taxes in recent years may be partly attributed to greater reliance on instruments other than taxation in environmental policy, such as emissions trading <sup>(20)</sup>. Additionally, in many Member States renewable energy sources are either subject to lower tax rates than exhaustible energy sources, or altogether exempted from other incentives to switch from fossil fuels towards more environmentally friendly energy sources. Thus, a country with a large share of renewable energy may still have a lower share of environmental taxes than another country which has not changed towards more environmentally friendly energy.

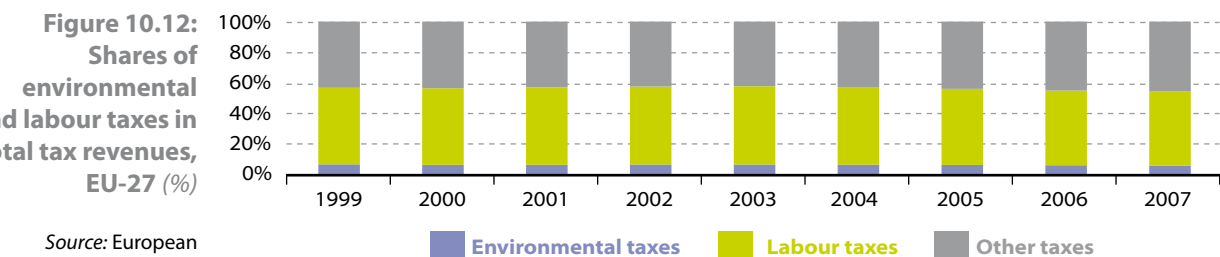
Generally, the taxation on labour is much higher in the EU than in other major industrialized economies <sup>(21)</sup>. As with environmental taxes, the share of labour taxes in total tax revenues fluctuated between 2000 and 2007. The highest share was in 2003 (51.1 %) and the lowest in 2007 (48.7 %). However, despite the widespread consensus in the EU on the desirability of lower taxes on labour and the fact that a majority of the Member States had a decreasing share of labour taxes in 2007 compared to 2000, the level of the implicit tax rate <sup>(22)</sup> on labour was still rising, thus confirming the widespread difficulty in achieving the aim of lower labour tax rates <sup>(23)</sup>.

**Figure 10.11:** Ratio of environmental taxes to labour taxes, EU-27



Source: European Commission services, Eurostat (tsdgo410)

**Figure 10.12:** Shares of environmental and labour taxes in total tax revenues, EU-27 (%)



Source: European Commission services, Eurostat (tsdgo410)



One of the policy guiding principles of the Sustainable Development Strategy is to ensure that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human health and the environment. More specifically, the Strategy requires Member States to consider further steps to shift taxation from labour into resource and energy consumption and/or pollution.

### Indicator relevance

The indicator compares the shares of both environmental and labour taxes in total tax revenues. Environmental taxes are defined as taxes where the tax base is a physical unit (or proxy of it) of something that has a proven, specific negative impact on the environment. Environmental tax revenues stem from four types of taxes: energy taxes; transport taxes; pollution taxes; resource taxes. Taxes on labour are generally defined as all personal income taxes, payroll taxes and social contributions of employees and employers that are levied on labour income (both employed and non-employed).

### Definition

## Methodological notes

Detailed methodological notes on the indicators used in this publication can be found on the Eurostat sustainable development indicator web pages: <http://ec.europa.eu/eurostat/sustainabledevelopment>

### Citizens' confidence in EU institutions

The level of citizens' confidence in each EU institution (European Parliament, European Commission and Council of the European Union) is expressed as the share of positive opinions (people who declare that they 'tend to trust') about the particular institution. The indicator is derived from the standard Eurobarometer opinion poll which is conducted on behalf of the European Commission. The data used for this indicator are compiled through regular public surveys of the perception of the action of and trust in the main EU institutions. The indicator should be interpreted with care because the perception can be influenced by a number of factors, in particular, the public awareness of the EU institutions, the socio-economic context and/or personal factors of the respondents.

### Infringement cases

Information on the 'number of infringement cases brought before the Court of Justice' is extracted from the administrative records of the European Court of Justice (annual reports). Infringement cases can cover cases of different natures, including not only the failure to transpose or to notify the transposition of EU directives, but also the lack of conformity of a national law with the rules of the EC Treaty, or a regulation. The indicator also covers cases where the consistent administrative practice of a Member State authority is not in conformity with Community law.

The number of new infringement cases is not available by Member State. For this breakdown, only the number of actions for failure to fulfil obligations is available.

### Transposition of Community law

Information on the transposition of Community law is extracted from the annual reports of the Commission on the monitoring of the application of Community law, for all years except 1996. For 1996, the data come from the latest monthly report available (November 1996).

The indicator looks at the situation of the notification by Member States of the total number of national measures implementing directives. The percentage of implemented directives is calculated as the share of directives for which measures of implementation have been notified by Member States in the number of directives applicable on the reference date by Member States.

### Voter turnout

Information on voter turnout in national elections is extracted from the website of the International Institute for Democracy and Electoral Assistance ([www.idea.int](http://www.idea.int)). Information on voter turnout in EU parliamentary elections is extracted from the European Parliament website ([www.europarl.europa.eu](http://www.europarl.europa.eu)).

Voter turnout in national and EU parliamentary elections is dependent on the different voting systems of the Member States: there are Member States with compulsory voting systems (Belgium, Greece and Luxemburg) and Member States with a civic obligation to vote (Italy).

The Eurostat estimates of EU averages are calculated on the basis of weighted linear extrapolations of individual country averages.

### E-government availability

Information on e-government availability is derived from the annual measurement of the progress of online public service delivery across the European Union by the European Commission, Directorate-General for Information Society and Media. The indicator 'availability of public services online', is measured with an e-service sophistication model. This model illustrates the different degrees of sophistication of online public services going from 'basic' information provision over one-way and two way interaction to 'full' electronic case handling.

This method has been applied on a consistent basis over previous years across a basket of 20 common services to assess the progress of e-Europe: *Public services for citizens*: income taxes, job search, social security benefits (unemployment benefits, child allowances, medical costs and student grants), personal documents (passports and driver's license), car registration, application for building permission, declaration to the police, public libraries, enrolment in higher education, announcement of moving, birth and marriage certificates, health-related services; *Public services for businesses*: social contribution for employees, corporate tax, VAT, registration of a new company, submission of data to the statistical office, custom declaration, environment-related permits, public procurement.

### E-government usage

Data are obtained through annual national surveys carried out by the national statistical institutes using representative samples. They implement the Eurostat model for a Community survey on ICT usage by households and individuals. As such, data are produced in the context of a broad set of ICT usage information which allows for auxiliary control information on the e-government subject and improves accuracy. Accuracy is assessed by controlling sampling and non-sampling errors and documenting them in detailed quality reports coordinated by Eurostat.

### Environmental taxes compared to labour taxes

Data used for compilation of the indicators come from 1) national accounts data (table 9 of ESA 95 transmission programme: detailed tax and social contribution receipts by type of tax or social contribution and receiving sub-sector) available in the Eurostat reference database, 2) lists of taxes and social contributions specified according to national classification of taxes and social contributions provided by Member States.

The definition of 'total taxes' can be found in ESA 95: <http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/esa95-new.htm>

Labour taxes comprise both taxes on employed labour income and social security contributions as well as taxes on non-employed income and social security contributions that is raised on transfer income of non-employed persons.

Environmental taxes consist of the revenues from four types of taxes: energy taxes, transport taxes (including

registration and circulation car taxes) and pollution/resource taxes. Excluded are general value added tax (VAT) on environmentally harmful tax bases as well as royalty payments and other special taxes related to oil and gas extraction. For international comparison reasons and with regard to data availability, the framework is strictly limited to taxes as defined in the national accounts. This means that fees paid to government units in exchange for services received (e.g. waste and waste water collection services) are in general excluded.

## Chapter notes

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- (17) Commission communication, *i2010 – A European information society for growth and employment*, COM(2005) 229.
- (18) Commission communication, *The role of eGovernment for Europe's future*, COM(2003) 567.
- (19) Commission communication, *i2010 – A European information society for growth and employment*, COM(2005) 229.
- (20) European Commission, *Taxation trends in the European Union: data for the EU Member States and Norway*, 2009 edition, Luxembourg, Office for Official Publications of the European Union, 2009, pp. 109-13.
- (21) European Commission, *Taxation trends in the European Union: data for the EU Member States and Norway*, 2009 edition, Luxembourg, Office for Official Publications of the European Union, 2009.
- (22) The implicit tax rate (ITR), sometimes also referred to as an average or effective tax rate, is calculated by dividing the revenues from taxes on a special activity or good by an appropriate corresponding aggregate tax base from national accounts statistics.
- (23) European Commission, *Taxation trends in the European Union: data for the EU Member States and Norway*, op. cit.







# Abbreviations and acronyms

## Geographical aggregates and countries

EU-27	The 27 Member States of the European Union from 1 January 2007 (BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, IT, CY, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE, UK)
EU-25	The 25 Member States of the European Union from 1 May 2004 to 31 December 2006 (BE, CZ, DK, DE, EE, IE, EL, ES, FR, IT, CY, LV, LT, LU, HU, MT, NL, AT, PL, PT, SI, SK, FI, SE, UK)
EU-15	The 15 Member States of the European Union from 1 January 1995 to 30 April 2004 (BE, DK, DE, IE, EL, ES, FR, IT, LU, NL, AT, PT, FI, SE, UK)

Note that EU aggregates are back-calculated when sufficient information is available – for example, data relating to the EU-27 aggregate is presented wherever possible for periods prior to the accession of Bulgaria and Romania in 2007 and the accession of ten new Member States in 2004, as if all 27 Member States had always been members of the EU. The label is changed if the data refer to another aggregate (EU-25 or EU-15) or a footnote is added if the data refer to a partial total that has been created from an incomplete set of country information (no data for certain Member States or reference years).

## European Union Member States

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom





# Description of the complete EU set of sustainable development indicators, by theme

Note that the order of the themes as presented in this annex follows the order of the themes as presented on the Eurostat website. This differs from the order followed in the main body of this publication, which reflects the order of presentation in the EU Sustainable Development Strategy.

## Socioeconomic development

The indicators in this theme are intended to provide an overview of the evolution of the European economy and society, particularly as concerns the main policy issues and priorities described in the SDS and the Lisbon process. As the Lisbon Strategy and the SDS complement each other, the indicators of this theme in particular overlap to some extent with the set of Structural Indicators that monitor the Lisbon Strategy. Other aspects of socioeconomic development such as non-market goods and services, informal or unpaid activities, social capital and leisure time are currently not part of the indicator set.

The headline indicator for this theme is 'growth rate of GDP per inhabitant'. Even if a wide range of factors contribute to socioeconomic development, the gross domestic product (GDP) is a widely used measure of the overall economic performance and standard of living of a society. The growth rate of GDP measures the dynamism of the economy. It is presented here in terms of per inhabitant because the focus of sustainable development is on human well-being rather than simply on economic growth for its own sake.

The other indicators focus on the main challenges faced by the Union for attaining balanced economic growth. They are arranged in the following three sub-themes:

- **Economic development:** The level-2 indicator 'total investment, by institutional sector' is inter-dependent with the economy's growth capacity and key to increasing productivity. Level-3 indicators measure regional disparities ('dispersion of regional GDP per inhabitant'), and monitor the disposable income available for future consumption and investment through the indicator 'gross household saving'. The indicator 'net national income' that represents total primary income receivable by resident institutional units in return for some engagement in productive activity is not presented in this report, but is available on the Eurostat website.
- **Innovation, competitiveness and eco-efficiency:** The renewed SDS asserts that 'investments in human, social and environmental capital as well as technological innovation are the prerequisites for long-term competitiveness and economic prosperity'. Trends in competitiveness are assessed through the level-2 indicator 'labour productivity per hour worked'. At level 3, investment in knowledge and technology to measure innovation is measured by the 'research and development expenditure'. Increases in eco-efficiency, which are an important factor in long-term competitiveness, are monitored by the indicator on 'energy intensity'. The combination of these factors provides insights into the future potential for competitiveness. Three further indicators belonging to this sub-theme, are not evaluated in the report: 'turnover from innovation', which measures the share of turnover from products new to the enterprise and new to the market, 'real effective exchange rate', which assesses the price or cost competitiveness relative to the principal competitors in



international markets, and ‘effects of innovation on material and energy efficiency’ which gives the share of enterprises whose innovations are able to reduce the material and energy used in production.

- **Employment:** Employment contributes to economic performance, quality of life and social inclusion. The indicator ‘total employment rate’ provides the share of employed persons aged between 15 and 64, whilst ‘employment rate by gender’ serves to monitor female employment. Disparities in employment rates between regions are monitored with the indicator ‘dispersion of regional employment rates.’ ‘Unemployment rate by gender and age group’ gives the share of unemployed persons. Long-term unemployment is dealt with under the theme on social inclusion.

Neither of the two indicators considered as under development, ‘genuine savings’ and ‘eco-innovation’, are considered feasible at this stage.

### Theme: Sustainable consumption and production

The indicators of this theme monitor progress towards the EU SDS objectives and targets related to:

- promoting sustainable consumption and production patterns under the ‘sustainable consumption and production’ key challenge (see Box 4.1), and
- improving resource efficiency and avoiding the generation of waste under the ‘conservation and management of natural resources’ key challenge (see Box 5.1).

The headline indicator for this theme is ‘resource productivity’, which compares the amount of materials directly used by an economy with economic activity. It provides insights into whether decoupling between the use of natural resources and economic growth is actually taking place, thus addressing a key objective of the EU SDS.

The remaining indicators are arranged in three sub-themes:

- **Resource use and waste:** Indicators in this sub-theme monitor resource efficiency, trends in the use of non-renewable natural resources and the related environmental impacts. Breakdowns of ‘domestic material consumption’, in terms of components and material category complement the headline indicator. ‘Domestic material consumption by material’ is the proxy used to address the issue of ‘environmental impact of material consumption’ which is under development. The issue of waste generation is addressed through an indicator on ‘municipal waste generation’, used here as a proxy for ‘generation of total waste, by economic activity and GDP’, for which no time-series is yet available. An indicator on ‘municipal waste treatment’ looks at the share of municipal waste recovered through recycling and composting. Finally, ‘emissions of acidifying substances, ozone precursors and particulate matter with the evolution of GDP’, monitors the extent to which atmospheric emissions are coupled with economic growth. An indicator on the ‘generation of hazardous waste, by economic activity’ is currently under development. The current resource productivity indicator should be replaced with one based on ‘total material consumption’ (including hidden upstream flows related to imports). Further development is needed in order to identify indicators on the environmental impacts of material consumption.
- **Consumption patterns:** Two indicators provide contextual information on consumption. The ‘number of households’ provides information on one of the drivers for consumption, while the ‘household expenditure per inhabitant, by category’ shows the evolution of patterns of consumption reflected in consumer spending. Consumption patterns are monitored through two major areas of consumption which have important environmental



impacts: ‘electricity consumption by households’ and the ‘motorisation rate’. Data on the ‘consumption of certain foodstuffs per inhabitant’ was not available at the time this publication was produced, but should become available in the near future. The breakdown of ‘final energy consumption’ by sector provides an overview of the major sources of energy consumption. Other issues identified as in need of development for this sub-theme are ‘green public procurement’ and the ‘share of consumption of products with an eco-label’.

- **Production patterns:** This sub-theme monitors the sustainability of production patterns, in particular for the agricultural and the industrial sectors. ‘Organisations with an environmental management system’ measures the number of organisations certified according to the Eco-Management and Audit Scheme (EMAS) regulation. The indicator ‘eco-label awards’ provides information on the amount of greener products and services registered and available on the market. It is intended to replace these indicators with ‘share of industrial production from enterprises with a formal environmental management system’ and ‘share of production of products with an eco-label’ when they have been developed. In addition, the efficiency of industrial production levels should be measured by an indicator ‘energy and material use per unit of output, by industrial sector’, which is not yet available. Agricultural production patterns are measured by the indicators ‘area under organic farming’ and ‘livestock density index’. An indicator on ‘nitrogen balance’ would be more comprehensive than ‘livestock density index’ because it would include all sources of nitrogen and measure pressure more directly, but it would need to be developed at a regional level. Another indicator ‘area under agri-environmental commitment’ had to be excluded due to quality concerns. Finally, an indicator ‘ethical financing’ should still be developed.

## Theme: Social inclusion

The indicators of this theme monitor progress towards the objectives and targets related to social inclusion in the EU SDS key challenge ‘social inclusion, demography and migration’ (see Box 7.1).

The headline indicator of this theme, the ‘at-risk-of-poverty rate by gender’, measures the risk of poverty relative to a threshold of 60 % of the national median income.

The other indicators are grouped in three sub-themes:

- **Monetary poverty and living conditions:** The indicators of this sub-theme mainly consist of breakdowns of the headline indicator by gender, age group, household type and education. These indicators allow for a more detailed analysis about which socioeconomic groups are at particular risk of social exclusion. Two additional indicators are included the ‘relative at risk of poverty gap’ and the ‘inequality of income distribution’ to focus on intra-societal differences, measuring the extent of social inclusion rather than the number of people at risk. Other indicators that remain to be developed are ‘child well-being’, ‘material deprivation’ and ‘adequacy of housing conditions’.
- **Access to labour market:** The level-2 indicator of this sub-theme is ‘people living in jobless households, by age group’ because those people have particularly little contact to the labour market and thus face particular risk of social exclusion. Additionally, persons employed but still at risk of poverty, represented by the indicator ‘in-work poverty’, may have access to the labour market, yet the labour market itself seems not to provide them with enough earnings to prevent them from the risk of social exclusion. The ‘total long-term unemployment rate’ gives information on particular difficulties for integration into the labour market. While the ‘gender pay gap in unadjusted form’ provides an indication of the inequality experienced by women and is an important indicator concerning the objective of increas-



ing female labour market participation contained in the renewed EU SDS. While long-term unemployment indicates difficult access to the labour market for specific groups, the gender pay gap indicates different forms of inequality within the labour market. In-work poverty indicates to which extent employment itself helps overcoming income poverty.

- **Education:** The indicator 'early school leavers' measures the proportion of young people who leave school early and are therefore likely to lack the skills required to succeed in the labour market. An objective set in the EU Sustainable Development Strategy is to reduce the share of early school leavers to 10 %. A variant of the headline indicator, 'at-risk-of-poverty rate, by highest level of education attained', is also included. Other indicators for this sub-theme include 'persons with low educational attainment, by age group', 'low reading literacy performance of pupils', 'lifelong learning' 'ICT skills'. The contextual indicator 'public expenditure on education' cannot be evaluated since there is no well-defined optimum level for this expenditure.

### Theme: Demographic changes

The indicators of this theme monitor progress towards the objectives and targets related to demography and migration in the EU SDS key challenge 'social inclusion, demography and migration' (see Box 7.1). They are also linked to the economic indicators introduced in the European Employment Strategy, the social inclusion indicators agreed at the Laeken European Council in 2001 and the social protection indicators including in the New Monitoring Framework in 2008.

The headline indicator of the theme is the 'employment rate of older workers', which monitors the employment of persons aged between 55 and 64. It tracks progress towards the target set at the Stockholm European Council in 2001 that at least half of the population in this age group should be at work by 2010. Concerns on insufficient participation of older workers in the labour market were previously identified at the Lisbon European Council in 2000 and in the EU Sustainable Development Strategy by the operational objective of 'significantly increasing labour market participation of women and older workers according to set targets.'

The remaining indicators are grouped within three sub-themes:

- **Demography:** This sub-theme comprises indicators that reflect changes in population size and age distribution which could have consequences for future living conditions and present challenges for the sustainability of public finances and social protection for the elderly. The indicators, 'life expectancy at age 65, by gender', 'total fertility rate', and 'net migration, by age group' provide a picture of the population structure, whilst the contextual indicator 'old age dependency ratio' complements this picture by providing information on the elderly compared to the working-age population and projects this ratio 50 years into the future.
- **Old-age income adequacy:** This sub-theme consists of indicators on income of older people, related to their quality of life and risk of poverty and social exclusion. The 'aggregated income replacement ratio' and 'at-risk-of-poverty rate for persons aged 65 years and over', are particularly important with respect to the initiatives on social inclusion introduced at the Laeken European Council in 2001 and reaffirmed in the Sustainable Development Strategy. The overall objective is to make a decisive impact on the reduction of the number of people at risk of poverty and social exclusion by 2010.
- **Public finance sustainability:** These indicators are related to the objective of reducing public debt and ensuring sustainability of social protection systems, affirmed in the EU SDS and in the Social Protection and Social Inclusion Process. Pressures on public expenditure



are monitored by the 'general government consolidated gross debt', 'average exit age from the labour market' and the contextual indicator 'public expenditure on care for the elderly'. A further contextual indicator 'changes in public pensions expenditure and changes in projected theoretical income replacement ratio' presents a scenario of the possible future evolution of public expenditure on the aged. An additional indicator 'health expenditure on old age' which would be relevant for monitoring efforts to modernise social protection systems and guaranteeing adequate health for the elderly remains to be developed.

## Theme: Public health

The indicators of this theme monitor progress towards the objectives and targets related to public health in the EU SDS (see Box 6.1).

The headline indicator is 'healthy life-years at birth, by gender, compared with life expectancy'. While life expectancy is a robust and established indicator, reflecting health and health care in general, healthy life years is more concerned with quality of life and takes account of the fact that not all years of a person's life are lived in perfect health.

The remaining indicators are arranged in two complementary sub-themes:

- **Health and health inequalities:** This sub-theme covers the objectives of the strategy related to health status, including mental health, and health inequalities. The objective of curbing the increase in lifestyle-related and chronic diseases is monitored at level 2 through the 'death rate due to chronic diseases', although it would be preferable to develop an indicator on the 'incidence of chronic diseases'. 'Healthy life years and life expectancy at age 65, by gender' supplements the headline indicator by extending the picture to persons of retirement age. Mental health is monitored through the 'suicide death rate, by gender and by age group'. Inequalities are represented by 'self reported unmet need for medical examination or treatment, by income quintile'. An indicator on 'regional disparities' is under development. The issue of childhood health and diseases should also be addressed in the future.
- **Determinants of health:** The level-2 indicator, 'index of production of chemicals, by toxicity class', monitors the potential threat posed by chemical production to human health and the environment. It is intended that this indicator will be replaced by an 'index of apparent consumption of chemicals by toxicity class' when it has been developed. Exposure to environmental pollution is monitored through 'population exposure to air pollution by particulate matter', 'population exposure to air pollution by ozone' and 'proportion of population living in households considering that they suffer from noise'. The issue of health and safety at work is monitored by 'serious accidents at work'. A related issue, 'work-related stress', also needs to be addressed. Indicators related to lifestyle, especially on smoking and obesity, also need to be developed. Although partial data exist for many countries, they remain incomplete and unharmonised at EU level. Indicators also need to be developed on food safety, in particular the 'incidence of infectious food-borne diseases' and the presence of 'contaminants and residues in food and feed'. Finally an indicator on the 'monetary damage caused by air pollution' should be developed.

## Climate change and energy

The indicators of this theme monitor progress towards the objectives and targets related to climate change and energy in the EU SDS (see Box 2.1).

Two headline indicators have been chosen to represent this theme: 'greenhouse gas emissions' and 'share of renewables in gross inland energy consumption'. In order to better illustrate where





the EU is now in relation to the Kyoto target, the presentation of the first headline indicator has been supplemented with projections of emissions. The second headline indicator reflects the important role of renewable energy in reducing greenhouse gas emissions and dependency on imported energy.

The remaining indicators are arranged in two sub-themes:

- **Climate change:** ‘Greenhouse gas emissions by sector (including sinks)’ describes the contribution of key sources of emissions to total EU greenhouse gas emissions, as well as CO<sub>2</sub> removed by sinks and emissions due to international aviation and shipping. The ‘greenhouse gas intensity of energy consumption’ monitors to what extent efficiency and energy saving measures, and the use of renewables and lower-carbon energy sources have been able to reduce the emissions of greenhouse gases per unit of energy consumed. This sub-theme is supplemented by a contextual indicator showing the development of ‘global surface average temperature’.
- **Energy:** ‘Energy dependency’ provides information on the extent to which the EU depends on energy imports, an important aspect related to the security of energy supply. ‘Gross inland energy consumption, by fuel’ shows the total quantity of primary energy consumed to meet final energy needs. It is analysed in terms of both quantities and the energy mix. ‘Electricity generated from renewable sources’ and ‘combined heat and power generation’ provide information on environment-friendly electricity generation. The ‘share of biofuels in total fuel consumption of transport’ monitors the uptake of this renewable source of energy for transport. Finally, the ‘implicit tax rate on energy’ provides information on the use of economic instruments to influence energy consumption. There are also two issues under this sub-theme for which indicators should be developed, but which are not yet feasible: radioactive waste and the external costs of energy use.

### Theme: Sustainable transport

The indicators of this theme monitor progress towards the objectives and targets related to sustainable transport in the EU SDS (see Box 3.1).

The headline indicator ‘energy consumption by transport mode’ compares the energy consumption of transport with growth in GDP in order to assess the degree of decoupling.

The remaining indicators are divided into two sub-themes:

- **Transport and mobility:** The indicators in this sub-theme complement the headline indicator by looking at the modal split and demand for transport, which are the driving forces behind the impacts of transport on society and the environment. The indicators ‘modal split of freight transport’ and ‘modal split of passenger transport’ monitor the share of each mode of transport in total inland transport. The extent to which the demand for transport remains coupled to economic growth is monitored by two indicators: ‘volume of freight transport and GDP’ and ‘volume of passenger transport and GDP’. A further indicator ‘energy consumption, by transport mode’ provides background information on the energy consumed by the different transport modes. This sub-theme also includes an indicator under development on the ‘investment in transport infrastructure by mode’, which is intended to monitor whether there has been a shift in investments towards more environment-friendly modes. Finally, a contextual indicator, ‘passenger transport prices’ provides information on the evolution of prices for transport services by the different modes and the costs associated with the purchase, maintenance and repair of vehicles. Other issues for which indicators need to be developed under this sub-theme include ‘vehicle-kilometres by road’, the ‘use of public transport’, and the ‘external costs of transport activities’.



- **Transport impacts:** The level-2 indicators are 'greenhouse gas emissions by transport, by mode' and 'people killed in road accidents, by age group'. The level-3 indicators 'average CO<sub>2</sub> emissions per km from new passenger cars', 'emissions of ozone precursors from transport' and 'emissions of particulate matter from transport' monitor transport emissions and related issues. An issue which needs to be addressed is the fragmentation of natural areas by transport infrastructure, but such an indicator could also appear in the theme on natural resources.

## Theme: Natural resources

The indicators of this theme monitor progress towards the objectives and targets related to biodiversity, ecosystems and renewable natural resources in the EU SDS key challenge of conservation and management of natural resources (see Box 5.1). Issues related to non-renewable resource use and waste are dealt with in the chapters on 'sustainable consumption and production' and 'socioeconomic development'.

Two headline indicators represent this theme. The 'common bird index' provides information on the abundance and diversity of a selection of common European bird species and the subset of farmland birds. The indicator will be extended to forest bird species in the future. 'Fish catches outside safe biological limits' monitors the pressure on fish populations due to over-fishing.

The remaining indicators are split into the following four sub-themes:

- **Biodiversity:** The indicator 'sufficiency of sites designated under the EU Habitats Directive' measures the extent to which sites of Community importance proposed by the Member States adequately cover the terrestrial species and habitats listed in the Habitats Directive. This indicator is currently being extended so that it also covers the Birds Directive. 'Deadwood' is a proxy for biodiversity in forests as it plays a key role in the recycling of nutrients and organic matter by creating a wide variety of habitats for insects and other organisms. The indicator cannot however be evaluated because deadwood can also be undesirable, providing a habitat for insect pests and posing a fire risk in dry regions. Indicators which are currently being investigated for this sub-theme, some of which may replace current indicators, are the 'red list index', 'change of status of species of European interest', 'biodiversity index', 'abundance and distribution of selected species' and 'loss of important ecosystems'.
- **Fresh-water resources:** Both the quantity and the quality of water resources are of concern. Quantitative issues are monitored through the indicator 'Surface- and groundwater abstraction'. Water quality is monitored by means of the 'biochemical oxygen demand of rivers'. A further indicator, 'population connected to wastewater secondary treatment systems', monitors the degree to which wastewater is treated before it is returned to the environment. Indicators which need to be developed in this sub-theme include the 'percentage of water bodies with high or good ecological status', an 'index of toxic chemical risk to the aquatic environment', and 'concentration of organic matter as chemical oxygen demand of rivers'.
- **Marine ecosystems:** The 'size of the fishing fleet' is a contextual indicator which inadequately monitors the pressure on fish stocks. Issues which need to be addressed in this sub-theme are 'effective fishing capacity and quotas' and 'structural support to fisheries and share allocated to promote environmentally friendly fishing practices'. Two indicators which are needed to monitor the quality of marine ecosystems, 'concentration of mercury in fish and shellfish' and 'seagrasses', also need to be developed.



- **Land use:** An indicator on 'land-use change, by category' is intended to monitor the development of built-up land and loss of natural and semi-natural land. Data constraints have led to this indicator being replaced by 'increase in artificial surfaces, by category' in the current publication. 'Forest trees damaged by defoliation' reflects both the management and the health of forests. The monitoring and measurement of the volume of all trees, living or dead, which are felled during a given period, whether or not removed from the forest or other felling sites is provided by the indicator 'forest increment and fellings'. Indicators which are being investigated for this sub-theme are 'critical load exceedance for nitrogen' and the 'percentage of total land area at risk of soil erosion'.

### Theme: Global partnership

The indicators of this theme monitor progress towards the objectives and targets related to global poverty and sustainable development in the EU SDS (see Box 9.1). They are related to commitments the EU has made at the international level, in particular at the UN Millennium Summit in 2000 and the World Summit on Sustainable Development in Johannesburg in 2002.

The headline indicator, 'official development assistance (ODA)', monitors the degree to which the EU has fulfilled its development assistance commitments. Although ODA and private investment are not synonymous with sustainable development, the indicators show the level of financial resources that can potentially be used for global sustainable development, targeting developing countries in particular.

The remaining indicators are arranged in three sub-themes:

- **Globalisation of trade:** In the Sustainable Development Strategy, the EU has committed to integrating development concerns into other policy areas, including trade policy. The indicators, 'EU imports from developing countries, by income group, by group of products' and 'EU imports from least-developed countries, by group of products', provide information on the EU market share taken by developing and least-developed countries. An indicator, 'aggregated measurement of support', to monitor the fulfilment of EU commitments on reducing agricultural subsidies, which make it harder for developing countries to compete in the EU market, is also included in this sub-theme. However, better access to EU markets for developing countries does not guarantee that social and environmental standards have been observed when producing goods destined for EU markets or that prices paid are fair. A comprehensive indicator covering all fair-trade labelled products should complement this sub-theme, but current data are insufficient.
- **Financing for sustainable development:** Indicators under this sub-theme monitor the sources, types and beneficiaries of financial flows to developing countries. At level 2 this is carried out by the indicator 'total EU financing for development, by type'. Further indicators cover 'foreign direct investment in developing countries, by income group' 'ODA, by income group', 'untied ODA', 'bilateral ODA dedicated to social infrastructure and services', and 'bilateral ODA dedicated to debt'. Two contextual indicators, 'population living on less than 1USD a day', 'ODA per inhabitant in recipient countries', provide more nuance to the picture.
- **Global resource management:** The indicator 'CO2 emissions per inhabitant in the EU and in developing countries' illustrates the inequality of resource use between the EU and developing countries. 'Bilateral ODA dedicated to water supply and sanitation' provides information on the amount of aid going to improving access to adequate water resources, an important indicator in the context of the EU 'Water for Life' initiative. This issue is also



illustrated by a contextual indicator on the ‘population with sustainable access to an improved water source’. Other indicators under discussion are the ‘contribution of EU Clean Development Mechanism projects to reducing greenhouse gas emissions in developing countries’ and the ‘global footprint’. Another indicator which should be developed to complement the picture is the ‘share of global greenhouse gas emissions from countries having agreed limits on their emissions’.

## Theme: Good governance

The indicators of this theme monitor progress towards the objectives and targets related to the good governance provisions described in the Sustainable Development Strategy and towards the governance principles defined in the White Paper on European Governance (see Box 10.1).

The chapter contains no headline indicator as none was judged both robust and policy-relevant enough to provide a comprehensive overview of the good governance concept. The indicator on the level of citizens’ confidence in EU institutions was presented as headline indicator in the 2005 Monitoring Report; however, it has been used as a contextual indicator since 2007 and in this report.

The other indicators are grouped into the three following sub-themes:

- **Policy coherence and effectiveness:** This sub-theme focuses on better regulation and policy coherence as highlighted in the Sustainable Development Strategy. The indicators, ‘new infringement cases, by policy area’ and ‘transposition of Community law, by policy area’, focus mainly on the vertical dimension of policy coherence, i.e. coherence between the EU and national levels. The contextual indicator ‘citizens’ confidence in EU institutions’ provides information on the perception of EU institutions. Two additional indicators have been identified as needing to be developed in the future: ‘administrative cost imposed by legislation’ and ‘impact assessment’ (since several years, impact assessments are carried out for proposals of the European Commission).
- **Openness and public participation:** This sub-theme focuses on two policy guiding principles of the Sustainable Development Strategy, namely open and democratic society, and the involvement of citizens. The level-2 indicator is ‘voter turnout in national and EU parliamentary elections’. Level-3 indicators are ‘E-government on-line availability’ and ‘E-government usage by individuals’. The development of indicators on the ‘level of involvement of consumer groups and companies’, ‘awareness campaigns run by Member States’ and ‘public consultations’ would strengthen this sub-theme.
- **Economic instruments:** This sub-theme mainly relates to the polluter pays principle and the focus on economic instruments in the Sustainable Development Strategy. The indicator ‘shares of environmental and labour taxes in total tax revenues’ monitors the Strategy’s call for Member States to shift taxation from labour to environmental taxes. The development of an indicator on the ‘proportion of environmentally harmful subsidies’ would be useful to monitor the Strategy’s aim of eliminating subsidies that have considerable negative effects on the environment.





## Complete list of EU sustainable development indicators

This annex lists the complete EU SDI set (including indicators “under development” and “to be developed”) as it was published in the Commission staff working document ‘Progress report on the European Union sustainable development strategy 2007’, SEC(2007)1416. It links the indicators to the corresponding issues in the present Monitoring Report and to other sets, produced at European or world level, which use identical or similar indicators. When indicators are not identical but only similar, references to other sets appear in parentheses.

The following indicator sets are referred to:

- SI: structural indicators, used for assessing progress towards the objectives of the EU Lisbon Strategy; European Commission, Eurostat (<http://ec.europa.eu/eurostat/structuralindicators>)
- SEBI: SEBI 2010 — Streamlining European 2010 Biodiversity Indicators for assessing and informing about progress towards the European 2010 targets; EEA (the European Environment Agency), DG Environment of the European Commission, ECNC (the European Centre for Nature Conservation), UNEP/ PEBLDS Secretariat with the lead of Czech Republic and UNEP-WCMC (the World Conservation Monitoring Centre) (<http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995/>)
- MDG: indicators related to the millennium development goals, millennium indicators database, United Nations Statistics Division (<http://mdgs.un.org/unsd/mdg/>)
- UN-CSD: CSD theme indicators framework, United Nations Commission for Sustainable Development ([http://www.un.org/esa/dsd/dsd\\_aofw\\_ind/ind\\_csdindi.shtml](http://www.un.org/esa/dsd/dsd_aofw_ind/ind_csdindi.shtml))
- EEA: core set of indicators, European Environment Agency (<http://themes.eea.europa.eu/IMS/CSI>)
- Laeken: indicators on poverty and social exclusion adopted at the Laeken European Council, European Commission, Eurostat ([http://ec.europa.eu/employment\\_social/spsi/common\\_indicators\\_en.htm](http://ec.europa.eu/employment_social/spsi/common_indicators_en.htm))
- OECD: list of indicators contained in the OECD factbook 2005, Organisation for Economic Cooperation and Development (<http://www.sourceoecd.org/factbook>)



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
<b>SOCIOECONOMIC DEVELOPMENT</b>				
tsdec100	Growth rate of GDP per inhabitant	GDP growth per capita	CH1: 46, 47	(SI), (MDG), (UN-CSD), (Laeken), (OECD)
<b>Economic development</b>				
tsdec210	Total investment	Investment	CH1: 49	(UN-CSD), (OECD)
tsdec211	Public investment	Investment	CH1: 49	
tsdec212	Business investment	Investment	CH1: 49	SI
tsdec220	Dispersion of regional GDP per inhabitant	Regional disparities in GDP	CH1: 51	(OECD)
tsdec230	Net national income			
tsdec240	Household saving rate	Household saving	CH1: 52	(UN-CSD), (OECD)
<b>Innovation, competitiveness and eco-efficiency</b>				
tsdec310	Growth rate of labour productivity per hour worked	Labour productivity growth	CH1: 53	(SI), (UN-CSD), (OECD)
tsdec320	Total R&D expenditure	R&D expenditure	CH1: 54	SI, (UN-CSD), (OECD)
tsdec330	Real effective exchange rate			
tsdec340	Turnover from innovation			
tsdec350	Effects of innovation on material and energy efficiency			
tsien020	Energy intensity of the economy	Energy intensity	CH1: 55	SI, (UN-CSD), (EEA), (OECD)
tsdec370	Effects of innovation on reduced environmental impacts or improved health and safety			
<b>Employment</b>				
tsdec410	Employment rate	Employment	CH1: 56	(SI), (MDG), (UN-CSD), (Laeken), (OECD)
tsdec420	Employment rate, by gender	Female employment	CH1: 58	SI, (Laeken), (OECD)
tsdec430	Employment rate, by highest level of education attained	Employment	CH1: 57	(OECD)
tsdec440	Dispersion of regional employment rates, by gender	Disparities in regional employment	CH1: 59	SI, (Laeken), (OECD)
tsdec450	Unemployment rate, by gender	Unemployment	CH1: 62	SI, (Laeken), (OECD)
tsdec460	Unemployment rate, by age group	Unemployment	CH1: 62	(Laeken)
<b>Indicators to be developed</b>				
	Genuine savings			
	Eco-innovations			
<b>SUSTAINABLE CONSUMPTION AND PRODUCTION</b>				
tsdpc100	Resource productivity	Resource productivity	CH4: 124, 125	SI, (UN-CSD)
<b>Resource use and waste</b>				
tsdpc210	Municipal waste generated	Municipal waste	CH4: 129	SI, (UN-CSD), (EEA), (OECD)





Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
tsdpc220	Components of domestic material consumption	Domestic material consumption	CH4: 127	
tsdpc230	Domestic material consumption by material	Domestic material consumption	CH4: 128	(UN-CSD)
tsdpc240	Municipal waste treatment, by type of treatment method	Recycled and composted municipal waste	CH4: 130	SI, (UN-CSD), (EEA)
tsdpc250	<i>Generation of hazardous waste, by economic activity*</i>			(UN-CSD)
tsdpc260	Emissions of acidifying substances by source sector	Atmospheric emissions	CH4: 131, 132	(EEA)
tsdpc270	Emissions of ozone precursors by source sector	Atmospheric emissions	CH4: 131, 132	(EEA)
tsdpc280	Emissions of particulate matter by source sector	Atmospheric emissions	CH4: 131, 132	(EEA)
<b>Consumption patterns</b>				
tsdpc310	Electricity consumption of households	Electricity consumption of households	CH4: 136	
tsdpc320	Final energy consumption, by sector	Final energy consumption	CH4: 137	(UN-CSD), (EEA)
tsdpc330	Consumption of certain foodstuffs per inhabitant			
tsdpc340	Motorisation rate	Car ownership	CH4: 138	
<b>Production patterns</b>				
tsdpc410	Organisations and sites with EMAS registration	Environmental management systems	CH4: 139	
tsdpc420	Eco-label awards	Eco-labels	CH4: 140	
tsdpc430	Area under agri-environmental commitment			(SEBI)
tsdpc440	Area under organic farming	Organic farming	CH4: 142	(UN-CSD), (EEA)
tsdpc450	Livestock density index	Livestock density index	CH4: 143	
<b>Contextual indicators</b>				
tsdpc510	Number of households (for sub-theme Consumption patterns)	Number of households	CH4: 134	
tsdpc520	Household expenditure per inhabitant, by category (for sub-theme Consumption patterns)	Household expenditure	CH4: 135	(OECD)
<b>Indicators to be developed</b>				
	Total material consumption			
	Green public procurement			
	Share of consumption of products with an ecolabel / Awareness of ecolabels			
	Nitrogen balance			(SEBI)
	Ethical financing			



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
	Share of industrial production from enterprises with a formal environmental management system			
	Share of production of products with an ecolabel			
	Energy and material use per unit of output, by industrial sector			

SOCIAL INCLUSION				
tsdsc100	At-risk-of-poverty rate, by gender	Risk of poverty	CH7: 200, 202	SI, (UN-CSD), (Laeken), (OECD)
<b>Monetary poverty and living conditions</b>				
tsdsc210	At-persistent-risk-of-poverty rate*			SI, (Laeken)
tsdsc230	At-risk-of-poverty rate, by age group	Risk of poverty	CH7: 200, 201	
tsdsc240	At-risk-of-poverty rate, by household type	Risk of poverty	CH7: 201	
tsdsc250	Relative at-risk-of-poverty gap	Intensity of poverty	CH7: 203	(MDG), Laeken, (OECD)
tsdsc260	Inequality of income distribution	Income inequalities	CH7: 204	SI, (UN-CSD), (Laeken), (OECD)
<b>Access to labour market</b>				
tsdsc310	People living in jobless households, by age group	Jobless households	CH7: 205	(SI), Laeken
tsdsc320	In-work poverty	Working poor	CH7: 206	(Laeken)
tsdsc330	Total long-term unemployment rate	Long-term unemployment	CH7: 207	SI, (Laeken), (OECD)
tsdsc340	Unadjusted gender pay gap	Gender pay gap	CH7: 208	SI
<b>Education</b>				
tsdsc410	Early school-leavers	Early school-leavers	CH7: 210	SI, Laeken
tsdsc420	At-risk-of-poverty rate, by highest level of education attained	Risk of poverty	CH7: 201	
tsdsc430	Persons with low educational attainment, by age group	Adults with low educational attainment (adults)	CH7: 211	(SI), (UN-CSD), Laeken, (OECD)
tsdsc440	Life-long learning	Lifelong learning	CH7: 212	SI, (UN-CSD)
tsdsc450	Low reading literacy performance of pupils			Laeken
tsdsc460	Individuals' level of computer skills			
tsdsc470	Individuals' level of internet skills			
<b>Contextual indicator</b>				
tsdsc510	Public expenditure on education (for sub-theme Education)	Public expenditure on education	CH7: 209	SI, (OECD)
<b>Indicators to be developed</b>				
	Child well-being			(Laeken)
	Material deprivation			(Laeken)
	Adequacy of housing conditions			(Laeken)



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
<b>DEMOGRAPHIC CHANGES</b>				
tsdde100	Employment rate of older workers	Employment rate of older workers	CH8: 221	SI, Laeken, (OECD)
<b>Demography</b>				
tsdde210	Life expectancy at age 65, by gender	Life expectancy at age 65	CH8: 223	(Laeken)
tsdde220	Total fertility rate	Fertility rate	CH8: 224	(UN-CSD), (OECD)
tsdde230	Crude rate of net migration	Migration	CH8: 225	(OECD)
<b>Old-age income adequacy</b>				
tsdde310	Aggregate replacement ratio	Income level of over-65s compared to before	CH8: 227	Laeken
tsdde320	At-risk-of-poverty rate of elderly people	Risk of poverty for over-65s	CH8: 228	(Laeken)
<b>Public finance sustainability</b>				
tsdde410	General government debt	Public debt	CH8: 229	SI, (UN-CSD), (Laeken), (OECD)
tsdde420	Average exit age from the labour market	Retirement age	CH8: 230	SI, (Laeken)
<b>Contextual indicators</b>				
tsdde510	Old-age-dependency ratio (for sub-theme Demographic changes)	Elderly population compared to working-age population	CH8: 226	(UN-CSD), (Laeken), (OECD)
tsdde511	Projected old-age dependency ratio (for sub-theme Demographic changes)	Elderly population compared to working-age population	CH8: 226	(Laeken)
tsdde520	Projected evolution of EU-27 age-related public spending – baseline scenario (for sub-theme Public finance sustainability)	The impact of ageing on public expenditure	CH8: 232	(Laeken), (OECD)
tsdde521	Projected evolution of theoretical income replacement ratios (for sub-theme Public finance sustainability)	The impact of ageing on public expenditure	CH8: 233	
tsdde530	Expenditure on care for the elderly (for sub-theme Public finance sustainability)	Expenditure on care for the elderly	CH8: 231	(Laeken)
<b>Indicators to be developed</b>				
	Health expenditure on old age			(Laeken)
<b>PUBLIC HEALTH</b>				
tsdph100	Healthy life years and life expectancy at birth, by gender	Healthy life years	CH6: 177	SI, (UN-CSD), (Laeken), (OECD)
<b>Health and health inequalities</b>				
tsdph210	Death rate due to chronic diseases, by gender	Deaths due to chronic diseases	CH6: 179	
tsdph220	Healthy life years and life expectancy at age 65, by gender	Healthy life years	CH6: 177	
tsdph240	Suicide death rate, by age group	Suicides	CH6: 180	(UN-CSD), (OECD)
tsdph250	Suicide death rate, males by age group	Suicides		



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
tsdph260	Suicide death rate, females by age group	Suicides		
tsdph270	Self reported unmet need for medical examination or treatment, by income quintile	Unmet needs for healthcare	CH6: 182	(Laeken), (OECD)
	<i>Dispersion of regional death rates*</i>			
<b>Determinants of health</b>				
tsdph320	Index of production of toxic chemicals, by toxicity class	Production of toxic chemicals	CH6: 183	
tsdph370	Population exposure to air pollution by particulate matter	Exposure to air pollution by particulate matter	CH6: 185, 186	SI, (UN-CSD), (EEA)
tsdph380	Population exposure to air pollution by ozone	Exposure to air pollution by ozone	CH6: 187	SI, (UN-CSD), (EEA)
tsdph390	Population living in households considering that they suffer from noise	Annoyance by noise	CH6: 189, 190	
tsdph400	Serious accident at work	Serious accidents at work	CH6: 191	SI
<b>Indicators to be developed</b>				
	Incidence of chronic diseases			
	Childhood health/diseases			
	Deaths due to infectious food-borne diseases			
	Index of apparent consumption of chemicals by toxicity class			
	Dioxins and PCBs in food and feed			
	Pesticide residues in food			
	Overweight people, by age group			(Laeken), (OECD)
	Present smokers, by gender and by age group			(UN-CSD), (Laeken)
	Work with a high level of job strain/stress			
	Monetary damage of air pollution as % of GDP			

<b>CLIMATE CHANGE AND ENERGY</b>				
tsdcc100	Greenhouse gas emissions	Greenhouse gas emissions	CH2: 73, 74	SI, (UN-CSD), (EEA)
tsdcc110	Share of renewables in gross inland energy consumption	Consumption of renewables	CH2: 76, 77	(UN-CSD), (EEA), (OECD)
<b>Climate change</b>				
tsdcc210	Greenhouse gas emissions by sector	Greenhouse gas emissions by sector	CH2: 79, 80	
tsdcc220	Greenhouse gas emissions intensity of energy consumption	Greenhouse gas intensity of energy consumption	CH2: 81	(OECD)
	Projections of greenhouse gas emissions	Greenhouse gas emissions	CH2: 73	EEA
	Global surface average temperature	Global surface average temperature	CH2: 82	EEA



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
<b>Energy</b>				
tsdcc310	Energy dependency	Energy dependency	CH2: 83	
tsdcc320	Gross inland energy consumption, by fuel	Gross inland energy consumption	CH2: 84	(EEA), (OECD)
tsdcc330	Electricity generated from renewable sources	Electricity generation from renewable sources	CH2: 85	SI, (EEA), (OECD)
tsdcc340	Share of biofuels in fuel consumption of transport	Consumption of biofuels in transport	CH2: 86	(EEA)
tsdcc350	Combined heat and power generation	Combined heat and power	CH2: 87	SI
tsdcc360	Implicit tax rate on energy	Implicit tax rate on energy	CH2: 88	SI
<b>Indicators to be developed</b>				
	Radioactive waste			(UN-CSD)
	External costs of energy use			

<b>SUSTAINABLE TRANSPORT</b>				
tsdtr100	Energy consumption of transport	Energy consumption of transport relative to GDP	CH3: 98-100	(UN-CSD)
<b>Transport and mobility</b>				
tsdtr210	Modal split of passenger transport	Modal split of passenger transport	CH3: 103	(SI), (UN-CSD)
tsdtr220	Modal split of freight transport	Modal split of freight transport	CH3: 101	(SI), (UN-CSD)
tsdtr230	Volume of freight transport	Volume of freight transport relative to GDP	CH3: 105	SI, (EEA)
tsdtr240	Volume of passenger transport	Volume of passenger transport relative to GDP	CH3: 106	SI, (EEA)
	Modal share of investment in transport infrastructure	Investment in transport infrastructure	CH3: 107	
<b>Transport impacts</b>				
tsdtr410	Greenhouse gas emissions by transport mode	Greenhouse gas emissions from transport	CH3: 111	
tsdtr420	People killed in road accidents	People killed in road accidents	CH3: 110	(OECD)
tsdtr430	Emissions of ozone precursors from transport	Emissions of ozone precursors from transport	CH3: 114	
tsdtr440	Emissions of particulate matter from transport	Emissions of particulate matter from transport	CH3: 115	



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
tsdtr450	Average CO <sub>2</sub> emissions per km from new passenger cars	Average CO <sub>2</sub> emissions per km from new passenger cars	CH3: 113	
<b>Contextual indicator</b>				
tsdtr310	Price indices for transport (for sub-theme Transport and mobility)	Passenger transport prices	CH3: 109	
<b>Indicators to be developed</b>				
	Vehicle-km by road			
	Use of public transport			
	External costs of transport activities			
	Fragmentation of natural and semi-natural areas (to appear either in this theme or in Natural resources, depending on the type of indicator that is developed)			(SEBI), (UN-CSD)

<b>NATURAL RESOURCES</b>				
tsdnr100	Common bird index	Abundance of common birds	CH5: 155	(SI), (SEBI), (UN-CSD)
tsdnr110	Fish catches taken from stocks outside safe biological limits	Conservation of fish stocks	CH5: 156	SI, (MDG), (UN-CSD), (EEA)
<b>Biodiversity</b>				
tsdnr210	Sufficiency of sites designated under the EU Habitats Directive	Protected areas	CH5: 158	SI, SEBI, (MDG), (UN-CSD), (EEA)
tsdnr220	Deadwood on forest land	Deadwood on forest land	CH5: 160	(SEBI)
<b>Freshwater resources</b>				
tsdnr310	Surface and groundwater abstraction as a share of available resources	Water abstraction	CH5: 161, 162	(MDG), (UN-CSD), (EEA), (OECD)
tsdnr320	Population connected to urban wastewater treatment with at least secondary treatment	Wastewater treatment		(EEA)
	Biochemical oxygen demand in rivers	Water quality in rivers	CH5: 163	(SEBI), (UN-CSD), (EEA)
<b>Marine ecosystems</b>				
tsdnr410	<i>Concentration of mercury in fish and shellfish*</i>			
tsdnr420	Size of fishing fleet	Fishing capacity	CH5: 164	(EEA), (OECD)
<b>Land use</b>				
tsdnr510	Built-up areas	Change in land cover	CH5: 165, 166	(UN-CSD), (EEA)
tsdnr520	Forest increment and fellings			(SEBI)
tsdnr530	Forest trees damaged by defoliation	Forest trees damaged by defoliation	CH5: 167	(UN-CSD)
tsdnr540	<i>Percentage of total land area at risk of soil erosion*</i>			(UN-CSD)
<b>Indicators to be developed</b>				
	Biodiversity Index			
	Abundance and distribution of selected species			SEBI, (EEA)
	Change in status of species of European interest			



Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
	Red List Index for European species			SEBI, (MDG), (UN-CSD), (EEA)
	Index of toxic chemical risk to aquatic environment / Percentage of water bodies with high or good ecological status			(UN-CSD)
	Concentration of organic matter as chemical oxygen demand of rivers			
	Effective fishing capacity and quotas			
	Structural support to fisheries and % allocated to promote environmentally friendly fishing practices			(OECD)
	Seagrasses			
	Critical load exceedance for nitrogen			SEBI

GLOBAL PARTNERSHIP				
tsdgp100	Official development assistance as share of gross national income	Official development assistance	CH9: 243	(MDG), (UN-CSD), (OECD)
<b>Globalisation of trade</b>				
tsdgp210	EU Imports from developing countries, by income group	Imports from developing countries	CH9: 245	(MDG), (UN-CSD)
tsdgp220	EU Imports from developing countries, by group of products			(MDG), (UN-CSD)
tsdgp230	EU Imports from least-developed countries, by group of products	Share of imports from least-developed countries	CH9: 246	(MDG), (UN-CSD)
tsdgp240	Aggregated measurement of support for agriculture	Subsidies for EU agriculture	CH9: 247	(MDG), (OECD)
<b>Financing for sustainable development</b>				
tsdgp310	Total EU financing for developing countries, by type	Financing for developing countries	CH9: 248	
tsdgp320	Foreign direct investment in developing countries, by income group	Share of foreign direct investment in low-income countries	CH9: 249	(SI), (UN-CSD), (OECD)
tsdgp330	Official development assistance, by income group	Share of official development assistance for low-income countries	CH9: 250	
tsdgp340	Untied official development assistance	Share of untied assistance	CH9: 251	(MDG)
tsdgp350	Bilateral official development assistance dedicated to debt	Assistance for debt relief	CH9: 252	(OECD)
tsdgp350	Bilateral official development assistance dedicated to social services	Assistance for social infrastructure and services	CH9: 253	(MDG), (OECD)
<b>Global resources management</b>				
tsdgp410	CO <sub>2</sub> emissions per inhabitant in the EU and in developing countries	CO <sub>2</sub> emissions per inhabitant	CH9: 254	(MDG)
tsdgp350	Bilateral official development assistance dedicated to water supply and sanitation	Assistance for water supply and sanitation	CH9: 255	(OECD)





Table code	Indicator (* = under development)	Issue	Page	Other indicator sets
<b>Contextual indicators</b>				
tsdgp510	Population living on less than 1USD a day (for sub-theme Financing for sustainable development)*			(MDG), (UN-CSD)
tsdgp520	Official development assistance per capita in donor and recipient countries (for sub-theme Financing for SD)	Official development assistance	CH9: 244	
tsdgp530	Population with sustainable access to an improved water source (for sub-theme global resource management)*			(MDG), (UN-CSD)
<b>Indicators to be developed</b>				
	Sales of selected fair-trade-labelled products			
	Share of global greenhouse gas emissions from countries having agreed limits on their emissions			
	Contribution of the Clean Development Mechanism to greenhouse gas emission reductions in developing countries			
	Global footprint			
<b>GOOD GOVERNANCE</b>				
<b>Policy coherence and effectiveness</b>				
tsdgo210	New infringement cases, by policy area	Infringement cases	CH10: 265	
tsdgo220	Transposition of Community law by policy area	Transposition of Community law	CH10: 267	
<b>Openness and participation</b>				
tsdgo310	Voter turnout in national and EU parliamentary elections	Voter turnout	CH10: 269	
tsdgo320	E-government on-line availability	E-government availability	CH10: 271	SI
tsdgo330	E-government usage by individuals	E-government usage	CH10: 272	SI
<b>Economic instruments</b>				
tsdgo410	Shares of environmental and labour taxes in total tax revenues	Environmental taxes compared to labour taxes	CH10: 274	
<b>Contextual indicator</b>				
tsdgo510	Level of citizens' confidence in EU institutions (for sub-theme Policy coherence and effectiveness)	Citizens' confidence in EU institutions	CH10: 264	
<b>Indicators to be developed</b>				
	Administrative cost imposed by legislation			
	Impact assessment			
	Openness and participation			
	Level of involvement of consumer groups and companies			
	Public consultations			
	Proportion of environmentally harmful subsidies			



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