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Sustainable development in the European Union

2011 monitoring report of the EU sustainable development strategy

2011 edition

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Cataloguing data can be found at the end of this publication.

Luxembourg: Publications Office of the European Union, 2011

ISBN 978-92-79-18516-8
doi:10.2785/1538
Cat. No KS-31-11-224-EN-C

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Printed in Belgium

PRINTED ON RECYCLED PAPER THAT HAS BEEN AWARDED THE EU ECOLABEL FOR GRAPHIC PAPER (http://ec.europa.eu/ecolabel)

Foreword

In 2012, the Rio+20 United Nations Conference on Sustainable Development will take place with the aims of renewing the global political commitment to sustainable development, assessing the progress and gaps in the implementation of agreed commitments, and addressing new and emerging challenges. The Conference is organised 20 years after the 1992 United Nations Conference on Environment and Development (the Earth Summit) which promoted the concept of sustainable development, whereby the protection of the environment should be integrated with economic growth strategies, and both linked to the provision of decent living and working conditions and equitable access to resources. Rio+20 represents an important step forward for global sustainable development, and will exert a strong influence on the overarching EU sustainable development strategy, as well as the strategy for growth and jobs within Europe 2020 where the sustainability of economic, social and environmental developments is among the main principles.

Sustainable development is a fundamental 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 does not yet show clear signs of recovery from the economic and financial crisis and is facing looming food and energy crises, climate change and threats to social cohesion and security, 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 assessment of EU policies. Eurostat and the European Statistical System play a leading role in providing the high quality information needed to support evidence-based decision-making. This biennial report is one visible outcome and monitors to what extent the EU is on track to achieving the concrete goals for a sustainable development set out in the strategy.

Walter Radermacher

Director-General, Eurostat

Abstract

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.

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 is intended to contribute to the biennial review on the implementation of the strategy by the European Council.

The statistics cover a wide range of issues related to 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 the latest year available (2009/10 where possible).

Production:

First drafts were based on data extracted in September 2010. A final data extraction took place over the summer of 2011 prior to completion of the manuscript in September 2011.

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For further information, please consult the Eurostat web pages on sustainable development indicators: http://ec.europa.eu/eurostat/sustainabledevelopment

Acknowledgements

Drafts of this publication were reviewed by an extensive team of experts and independent specialists. The editorial team would like to thank all those who freely gave their time. The publication could only be published thanks to their contributions and support. The final publication is, nevertheless, the complete responsibility of the editorial team.

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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 overall aim of the EU SDS is to improve the quality of life

The 2006 EU Sustainable Development Strategy (EU SDS) describes how the EU will more effectively meet the challenge of sustainable development. The overall aim is to achieve 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, so as to ensure prosperity, environmental protection and social cohesion.

The use of indicators to measure progress is an integral part of the strategy

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 three monitoring reports, in 2005, 2007 and 2009. This fourth report charts progress in the implementation of the strategy's objectives and key challenges.

This report assesses progress towards the targets and objectives of the EU SDS

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 quantitative assessment of whether the EU is moving in the right direction as reflected in the developments revealed by the EU SDIs.

Is the European Union on a sustainable development path?

This report does not aim to give an absolute assessment 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 here. It aims rather at an assessment of progress towards the objectives and targets of the EU SDS, which are intended to put the European Union on what has been implicitly defined as a path to sustainable development. As such, the report 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' ([1]).

In order to assess whether there has been progress towards sustainable development, it may be of interest to compare the results of the evaluation of trends in the headline indicators as they appear

([1]) The concept of sustainable development should be distinguished from that of sustainability. 'Sustainability' is a property of a system, whereby it is maintained in a particular state through time. The concept of sustainable development refers to a process involving 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.

in the current report with those of the 2009 report ([2]). However, two factors make such a comparison difficult. Firstly the picture is complicated by the disruptive effects of the economic and financial crisis over the period since 2007. The following section in this chapter attempts to describe some of these impacts. Secondly, there are several differences between the datasets, targets and evaluation methodologies used in the two reports. With the aim of compensating for these differences, the evaluations of the previous report have been revised in line with the datasets and methodologies used in the current report and are shown in Table 1 alongside the original 2009 evaluations and those of the current report.

Table 1: Comparison between evaluations of headline indicators in 2009 and in this edition ([3])

SDI theme	Headline indicator	2009 report	Revised 2009 evaluation	Current report
Socioeconomic development	Real GDP per capita			
Sustainable consumption and production	Resource productivity			
Social inclusion	Risk of poverty or social exclusion			
Demographic changes	Employment rate of older workers			
Public health	Life expectancy and healthy life years			
Climate change and energy	Greenhouse gas emissions			
	Consumption of renewables			
Sustainable transport	Energy consumption of transport relative to GDP			
Natural resources	Abundance of common birds			
	Conservation of fish stocks			
Global partnership	Official development assistance			
Good governance	*[No headline indicator]*	:	:	:

Although only two of the eleven headline indicators show the same evaluation result in both reports (life expectancy from the 'Public health' theme and the common bird index from the 'Natural resources' theme), if the current datasets, targets and evaluation methodology had been used in 2009 the evaluation of seven indicators would be identical in both reports. In addition to the two indicators already mentioned, these include the two 'decoupling' indicators (resource productivity and energy consumption of transport relative to GDP), the risk of poverty or social exclusion, the consumption of renewables and the conservation of fish stocks.

Real changes have therefore occurred in the case of the remaining four indicators. Of these, the situation has become less favourable for two indicators: real GDP per capita and employment of older

([2]) Eurostat, *Sustainable development in the European Union: 2009 monitoring report of the EU sustainable development strategy*, Luxembourg, Office for Official Publications of the European Union, 2009.
([3]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

workers. On the other hand the situation has become more favourable for two indicators: greenhouse gas emissions, and official development assistance. As described in the following section, the economic and financial crisis has played a role in several of these changes.

Overall, the circumstances outlined above make it hard to assess whether progress has been made since the 2009 report. However, considering that nearly half of the headline indicators are moving in a moderately unfavourable direction, it cannot yet be concluded that the European Union is on a pathway to sustainable development.

Impacts of the global economic and financial crisis

As a consequence of the global economic and financial crisis which began in late 2007 the EU went into recession during 2008 ([4]). In mid-2011, as this report was being finalised, the EU economy was still only showing slow growth. The impact of these events has been severe and goes far beyond the economy, affecting many of the issues covered by the indicators presented in this publication. This section provides a brief summary of the areas affected over the period starting in 2007 and extending where possible to 2010. Although it is not clear at this point in time, some of the consequences, such as lower levels of investment, could have long-term and persistent knock-on effects which will only become apparent in later reports.

The liquidity problems in the banking sector, which began in 2007, led to a squeeze on credit and falling asset prices, feeding into lower consumer demand (reflected in the indicator 'household expenditure'), an increase in 'household saving', a decrease in 'investment' from businesses and households, a fall in international trade (reflected in the indicator 'imports from developing countries'), and a decline in 'real GDP per capita'. Levels of 'public debt' rose drastically. 'Employment' fell, particularly amongst the young, and men were hit harder than women ('female employment'). The trend of increasing 'employment rate of older workers' slowed down. Due to labour hoarding and changes to working hours 'labour productivity' fell. 'Research and development expenditure' on the other hand increased, as several countries have boosted their expenditure in an attempt to support economic recovery and longer-term growth. In response to falling demand, industrial production also fell as is evident in the example of the 'production of toxic chemicals'.

The rise in 'unemployment' and 'long-term unemployment' has had social impacts. Although the overall 'risk of poverty' decreased, it grew for the 25-49 year age group and also slightly for 18-24-year olds. The 'intensity of poverty' also increased, as did 'suicides', especially amongst men and the middle-aged. The 'crude rate of net migration' also fell, probably as a reaction to the difficulty in finding employment in the EU. In terms of combating global poverty, 'financing for developing countries' fell, due to reduced flows from private donors, rather than from official sources or NGOs.

Energy demand ('final energy consumption') fell in parallel to GDP. This lower consumption led to a stabilisation of the EU's 'energy dependence', breaking the long-term trend towards increased dependency. 'Greenhouse gas emissions' and pollutant 'atmospheric emissions', which were already decreasing, fell at an even faster rate.

Freight transport fell faster than GDP (reflected in the indicator 'volume of freight transport relative to GDP'). Nevertheless, probably due to a slower decrease of passenger transport, energy consumption of transport fell less than GDP ('energy consumption of transport relative to GDP'). 'Greenhouse gas emissions from transport' fell, and 'emissions of nitrogen oxides (NO_x) from transport' and 'emissions of particulate matter from transport' decreased at a faster rate than over previous years. The 'number of people killed in road accidents' also fell, probably as a result of lower traffic volumes.

The public reaction to the crisis and how it has been handled is reflected in the fall in 'citizen's confidence in EU institutions' and in 'voter turnout in national elections'.

([4]) For a deeper analysis of the crisis refer to: European Commission, Economic Crisis in Europe: Causes, Consequences and Responses, European Economy, No 7, 2009.

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.

Table 2: Evaluation of changes in the headline indicators *(EU-27, from 2000)* ([5])

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

(*) From 2005.
(**) From 2002.
(***) From 2006.
(****) EU aggregate based on 19 Member States.

Clearly favourable changes

Between 2008 and 2009 about 2 million people less at risk of poverty or social exclusion

Recent developments can be considered as favourable for the headline indicator of the 'social inclusion' theme, with fewer and fewer people being at **risk of poverty or social exclusion**. About 2 million people were lifted out of the risk of poverty or social exclusion between 2008 and 2009.

The 2020 targets for the two headline indicators for 'climate change and energy' are likely to be met

Changes can also be evaluated as clearly favourable for the two headline indicators related to 'climate change and energy'. Between 2000 and 2009, the EU's **greenhouse gas emissions** fell significantly, making it likely that both the EU-15's Kyoto commitments (referring to a reduction of 8 % until 2008-12) and the EU-27's target of reducing emissions by 20 % until 2020 compared to 1990 levels will be met. Due to changes in methodology, data for the second headline indicator **consumption of renewables** are only available for 2006 to 2008. However, if the current pace of change over this short period can be maintained, the EU will likely meet the target of reaching a 20 % share of renewables in gross final energy consumption set for 2020.

([5]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Moderately favourable changes

Moderately favourable changes for the indicators 'real GDP per capita', 'life expectancy' and the 'common birds index'

Moderately favourable changes can be observed for the headline indicators related to 'socioeconomic development' and 'public health' as well as for one of the two 'natural resources' headline indicators.

Concerning 'socioeconomic development', the headline indicator **real GDP per capita** grew on average by 0.9 % per year between 2000 and 2010, although the economic crisis and the subsequent recession in 2009 caused it to fall close to the level of 2005. Slow growth was experienced during 2010 for the EU as a whole and in mid-2011, when this report was being finalised, the EU economy was still only showing slow growth.

With regard to 'public health', data on **life expectancy** in the EU indicate some progress in extending the lifespan of the EU population. A girl born in 2008 would be expected to live, on average, 82.4 years and a boy, 76.4.

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 increased slightly, although the number of farmland birds declined unfavourably between 2000 and 2008.

Moderately unfavourable changes

Nearly half of the headline indicators show moderately unfavourable trends

Resource productivity has increased, but so has material consumption

The EU fell short of the 50 % target for employment of older workers set for 2010

A decoupling of energy consumption of transport from economic growth is hardly visible

Fish catches in the North-East Atlantic still exceed sustainable levels of exploitation

The EU is not on track to meet its ODA target of 0.7 % of GNI by 2015

Five of the eleven headline indicators of the EU SDI set show moderately unfavourable changes, including those related to 'sustainable consumption and production', 'demographic changes', 'sustainable transport' and 'global partnership' as well as one of the two headline indicators of the 'natural resources' theme.

The headline indicator for 'sustainable consumption and production' shows a moderately unfavourable trend for the period 2000 to 2007. Although rises in **resource productivity** show that the EU has become more efficient in the way it uses its resources, the demand for materials (and the associated environmental pressures) continued to increase.

Concerning the 'demographic changes' in the EU, the increase in the **employment rate of older workers** was until 2008 on track towards meeting the target of 50 % in 2010. However, as a consequence of the crisis, growth almost came to an end in 2009 and 2010, resulting in an employment rate of about 46 % in 2010, and the target was missed.

As with 'resource productivity', the **ratio of energy consumption of transport per unit GDP** decreased moderately between 2000 and 2009. Nevertheless, and despite a significant drop due to the crisis in 2009, energy consumption of transport has grown since 2000, although more slowly than the economy. A decoupling of energy consumption of transport from economic development is hardly visible.

Concerning the **conservation of fish stocks**, one of the two headline indicators of the 'natural resources' theme, total fish catches outside safe biological limits reached close to 24 % in 2009. Although this can be seen as an improvement compared to a share of about 37 % in 2000, overall fish catches still exceeded sustainable levels of exploitation.

As regards the EU's international commitments, the share of Gross National Income (GNI) spent by the EU on **official development assistance** to developing countries remained almost stable between 2005 and 2010 at about 0.4 % of GNI. The EU did not achieve therefore its intermediate target of 0.56 % in 2010, nor is it on track to achieve the target of dedicating 0.7 % of its GNI to ODA by 2015. However, it should be noted that many of the other indicators of the 'global partnership' theme display more favourable trends.

Clearly unfavourable changes

No headline indicator shows clearly unfavourable changes – suggesting that the European Union has made some progress along the path towards sustainable development. However, looking at the additional indicators within the individual themes of the EU SDI set, a number of clearly unfavourable changes still persist, and the overall picture may be less positive than the impression given by looking at the headline indicators in isolation.

: *No headline indicator*

The 'good governance' theme contains no headline indicator as no indicator is considered 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

Many of the long-term trends in the socioeconomic development theme have been influenced, either positively or negatively, by the recent global economic and financial crisis. In this respect trends have deteriorated in the short term in particular in investment, employment and unemployment, as well as in real GDP per capita and labour productivity, even if these last two have started to pick up again. On the other hand, improvements have been seen in R&D expenditure and energy intensity, and briefly in household saving.

Table 3: Evaluation of changes in the socioeconomic development theme
(EU-27, from 2000)

Level 1	Level 2	Level 3
Real GDP per capita	**Economic development**	
	Investment	Regional disparities in GDP
		Household saving
	Competitiveness, innovation and eco-efficiency	
	Labour productivity	Research and development expenditure
		Energy intensity
	Employment	
	Employment	Female Employment
		Regional disparities in employment
		Unemployment

Headline indicator

A period of rapid economic growth stalled with the financial crisis

Slow growth in 2010

Between 2000 and 2010, real GDP per capita for the EU as a whole grew by 0.9 % per year on average, but there were wide variations in the growth rate across the EU. During the economic upswing from 2003 to 2007, growth rates rose to 2.7 %, although several eastern European countries grew much faster. However, as a reaction to the economic crisis, GDP per capita stalled in 2008 and fell sharply by -4.6 % in 2009. Hardest hit by the crisis were the fastest-growing eastern European Member States. Slow growth was experienced in the EU as a whole and in most Member States during 2010, although Ireland, Greece, Spain and Romania experienced negative growth.

Economic development

Investment remained fairly stable expressed as a share of GDP

Regional disparities in economic activity diminished

Between 2000 and 2009, the share of investment in GDP followed the economic cycle (in particular due to business investment). After reaching a peak of 21.7 % in 2007, it fell over 2008 and 2009 to a level of 19.4 % mainly due to a cutback in business **investment** in response to the economic crisis.

Regional disparities in GDP in the EU declined from 35.5 % to 32.7 % during the period 2000 to 2007. Together with the reduction of regional disparities in employment it suggests a growing convergence of EU regions. Within-country dispersion of regional GDP remained high, in particular in eastern European Member States, where the rapid transition into market economies has led to an increasingly uneven distribution of wealth.

Saving rate saw an upturn in response to the economic crisis

For most of the period 2000 to 2010, household saving as a share of disposable income in the EU fell steadily; however, it rose slightly in 2008 and considerably in 2009 as a response to the financial crisis. In 2010 the level of household savings fell again, almost to 2004 levels. Differences across Member States remain significant

Innovation, competitiveness and eco-efficiency

Labour productivity slowed with the crisis

R&D expenditure lags behind the target path

Absolute decoupling of energy consumption from economic growth

Labour productivity in the EU rose on average by 1.1. % per year between 2000 and 2010. Although it grew by up to 1.7 % or 1.8 % per year in several years, mostly due to eastern European Member States catching up, it started to fall in 2008 and in 2009 dropped by 1.2 %. In 2010 it grew by 1.6 %.

For most of the period between 2000 and 2009, the share of R&D expenditure in GDP remained fairly stable for the EU as a whole at between 1.8 and 1.9 %. In 2008 and 2009 R&D expenditure improved slightly.

Between 2000 and 2009 the energy intensity of the EU decreased steadily, in some years by as much as 2.5 %, resulting in an absolute decoupling of gross inland energy consumption from GDP growth.

Employment

Progress towards the 75 % employment target hindered by economic crisis

Gender gap in employment and unemployment is closing

Achievements in combating unemployment thwarted by the economic crisis

Employment in the EU rose from 66.6 % in 2000 to 70.4 % in 2008, but had fallen back to 68.6 % by 2010. Men, young people and persons with lower education were particularly affected.

Over the period 2000 to 2010, female employment rose steadily from 57.3 % to 62.1 %, narrowing the gender gap. Considerable differences remain between Member States.

Regional disparities in employment rate fell from 13.0 % in 2000 to 11.8 % in 2009. Improvement has been achieved by the progressively more stable position of women in regional economies.

On average, unemployment increased in the EU between 2000 and 2010. Although it fell to low levels following the economic upturn of 2003 to 2007, in response to the economic crisis, it jumped in 2009 and stabilised in 2010, to levels higher than in 2000.

Sustainable consumption and production

Changes in consumption and production patterns since 2000 show some highly unfavourable but also some highly favourable trends. On the one hand, consumption of materials and electricity, as well as the generation of hazardous waste, are still increasing (both in absolute terms and on a per capita basis). On the other hand, the final energy consumption and the amount of non-mineral waste

generated in the EU have declined, and the share of waste recycled or composted has increased. Moreover, there have been substantial reductions in the emissions of important air pollutants, and there has been progress related to production patterns regarding the ecological dimension of corporate social responsibility and towards more environmentally friendly agricultural 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**	
	Non-mineral waste (*)	Domestic material consumption
		Hazardous waste (*)
		Recycled and composted municipal waste
		Atmospheric emissions
	Consumption patterns	
	Electricity consumption of households	: Number of people in households
		: Household expenditure
		Final energy consumption
		Car ownership
	Production patterns	
	Environmental management systems (**)	Ecolabels
		: Area under agri-environmental commitment
		Organic farming (***)
		Livestock density index (**)

(*) From 2004.
(**) From 2003.
(***) From 2005.

Headline indicator

Only relative decoupling of resource use from economic growth

Developments in resource productivity (measured as the ratio between GDP and domestic material consumption) have been moderately unfavourable for the period 2000 to 2007. Although an increase in resource productivity between 2000 and 2007 indicates that the EU has become more efficient in the way it uses its resources (GDP grew at a faster rate than domestic material consumption), the demand for materials (and the associated environmental pressures) continued to increase. The decoupling of resource use from economic growth was therefore only relative.

Resource use and waste

Consumption of materials continues to rise

Domestic material consumption increased moderately in absolute and per capita terms over the period 2000 to 2007. This was driven by an increase in domestic extraction and imports stemming from a growing demand for minerals.

The generation of waste shows both favourable and unfavourable trends. On the one hand, the generation of non-mineral waste in the EU decreased between 2004 and 2008, and municipal waste treatment shifted significantly towards recycling and composting between 2000 and 2009. On the other hand, the generation of hazardous waste rose considerably between 2004 and 2008.

Waste management improving, although more hazardous waste

Man-made emissions to the atmosphere of sulphur oxides, nitrogen oxides, non-methane volatile organic compounds and ammonia all fell considerably between 2000 and 2008.

Decrease in atmospheric emissions

Consumption patterns

EU household expenditure rose steadily between 2000 and 2007, but dropped slightly in 2008 and 2009, as a consequence of the economic crisis. In parallel, the number of people per household decreased, reflecting a continuous trend towards more but smaller households.

More but smaller households with increasing expenditures

Between 2000 and 2009, the electricity consumption of households rose substantially, but final energy consumption decreased slightly mostly as a consequence of the economic crisis.

Final energy consumption decreased in 2009

Between 2000 and 2009 the number of passenger cars per 1 000 inhabitants was still on the rise, albeit at a slower pace than during 1990 to 2000.

More and more cars on the roads

Production patterns

European businesses are increasingly integrating social and environmental concerns into their operations and interactions with stakeholders on a voluntary basis, which is a concept known as 'corporate social responsibility'. The number of organisations having implemented a certified environmental management system according to the 'Eco-Management and Audit Scheme' Regulation rose significantly between 2003 and 2010. In addition, the number of EU ecolabel licenses increased considerably between 2000 and 2010, but market shares of the related products remain low.

Increase in ecolabel licenses and organisations certified with an environmental management system

With regard to sustainable agricultural production in the EU, the share of agricultural area under agri-environmental commitments and the share of organic farming in total utilised agricultural area increased notably until 2009. In addition, the number of livestock units per hectare showed a favourable decline between 2003 and 2007.

Signs of agricultural de-intensification

Social inclusion

The trends observed in the social inclusion theme since 2000 are in general rather encouraging, especially in terms of reducing poverty. There has been a clearly favourable development in the overall risk of poverty or social exclusion. This is reflected in particular in the number of people at risk of severe material deprivation and the number of people living in households with very low work intensity. There has also been a clearly favourable development in reducing the number of adults with low educational attainment and the difference between men's and women's wages (gender pay gap). Furthermore, there has been a moderately favourable development in the risk of monetary poverty, the intensity of poverty, income inequalities and long-term unemployment. However, there have also been several unfavourable developments. The share of working poor has risen, participation in life-long learning has declined, missing the target set for 2010, and further progress is necessary in reducing the share of early school leavers and low reading literacy of pupils.

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

Level 1	Level 2	Level 3
Risk of poverty or social exclusion (*)	**Monetary poverty and living conditions**	
	Risk of poverty after social transfers (*)	Intensity of poverty (*)
	Severe material deprivation (*)	Income inequalities (*)
	Access to labour market	
	Households with very low work intensity (*)	Working poor (*)
		Long-term unemployment
		Gender pay gap (**)
	Education	
	Early school leavers (***)	Adults with low educational attainment
		Life-long learning (***)
		Low reading literacy performance of pupils

(*) From 2005.
(**) From 2006.
(***) From 2003.

Headline indicator

Between 2008 and 2009 about 2 million people less at risk of poverty or social exclusion

About 2 million people were lifted out of the risk of poverty or social exclusion between 2008 and 2009. This was mainly achieved through reducing the number of people suffering from severe material deprivation.

Monetary poverty and living conditions

Slight fall in share of people at risk of monetary poverty

Less material deprivation

The share of people at risk of poverty after social transfers has only slightly decreased since 2005, but the number of people suffering from severe material deprivation has decreased substantially, and most Member States are in line with this favourable trend. The gap between the income of the poor and the poverty threshold (poverty intensity) has been slightly reduced, and income inequality has marginally decreased.

Access to labour market

Slightly less long-term unemployment, but more working poor

Between 2005 and 2009 the share of people living in households with very low work intensity fell in the EU as a whole and in most Member States. While the share of long-term unemployment has fallen very slightly since 2000, the share of people at risk of poverty despite being employed (working poor) increased between 2005 and 2009. The difference between male and female wages fell significantly between 2006 and 2009, but not in all Member States.

Education

Several favourable trends but the 2010 target for life-long learning was missed

The share of early school leavers declined in the EU, but further progress is still necessary to reach the 2020 target. Since 2003 there has been progress in the participation in life-long learning as well, but the 2010 target was not reached. The share of adults with low educational attainment steadily declined, and the previously worsening trend in low reading literacy performance among pupils was reversed in 2009 although it will be insufficient to meet the target in 2010.

Demographic changes

The demographic indicators on life expectancy and fertility, as well as those related to the adequacy of income in old age, have been developing favourably. However, even if substantial progress has been made, the 2010 target for the employment of older workers has not been achieved. Furthermore, indicators monitoring the sustainability of public finances have developed unfavourably. Levels of public debt, for example, rose on average within the EU from 62.3 % in 2008 to 80 % in 2010 and there has been only slow progress in increasing the average age of retirement.

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

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

(*) From 2002.
(**) From 2005.
(***) From 2001.

Headline indicator

Although 2010 target was missed, more older workers employed

The target of having half of older workers employed was not reached in 2010. Nevertheless, the participation of older workers in the labour market increased over the entire period and this will help dampen demand for expenditure on pensions.

Demography

The ratio of the active to inactive population may continue to decline with potential consequences for the sustainability of public finances

Life expectancy at age 65 rose for both men and women between 2002 and 2008. The rate of population renewal also rose slightly, remaining, however, below the rate of replacement, and, taken together with longer life expectancies, indicates that the working age population may continue to shrink relative to the population who have retired.

Immigration into the EU exceeds emigration, although it fell sharply between 2007 and 2009. The ratio of elderly people to the working age population increased between 2000 and 2010, from 23.2 % to 25.9%. And it is projected to increase further, reaching more than 50 people aged 65 years or older per 100 persons of working age by 2060. An increase in the old-age dependency ratio, coupled with low retirement ages, will put pressure on public finances depending on the level of financing within state guaranteed pensions.

Old-age income adequacy

Average pension levels remain adequate and the risk of poverty has fallen for the elderly

The income level from pensions of people aged between 65 and 74, compared to the income level from earnings of those aged between 50 and 59, remained stable at 51 % between 2005 and 2009. The risk of poverty for over-65s decreased between 2000 and 2009, as also happened in the mid-1990s.

Public finance sustainability

The current economic crisis is placing high pressure on the sustainability of public finances

Over the period 2000 to 2007 the level of public debt was successfully reduced, falling to just below the 60 % EU reference mark in 2007. After 2007, however, with the onset of the financial crisis, public debt increased to even higher levels than those seen in the mid-1990s, reaching 80 % in 2010.

Despite an increase in the employment rate of older workers (see headline indicator), the rate of increase in the average retirement age has slowed down, making it unlikely that the 2010 target rate set at the Barcelona European Council in 2002 can be achieved. Expenditure on care for the elderly as a share of GDP, after increasing between 2000 and 2005, decreased between 2005 and 2007 before levelling out in 2008 at a more favourable level close to that of 2000.

Both the ageing population and the structure of social protection systems within the Member States are placing pressure on the sustainability of public finances. Projected changes in the income-replacement ratio and public pension expenditure indicate the potential future impact of an ageing population.

Public health

The developments in the public health theme since 2000 present a generally favourable picture. The headline indicator shows that in general people are living longer. Improvements are visible in the reduction of deaths due to chronic diseases, suicides, the production of toxic chemicals, annoyance by noise, and serious accidents at work. On the other hand, not all have benefitted from the improvements and there are still important inequalities in health and access to healthcare. Furthermore there remain challenges 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.

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

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

(*) From 2002, based on life expectancy only.
(**) From 2002.
(***) From 2005.

Headline indicator

Improvements in life expectancy demonstrate that there has been progress in promoting a healthier and longer life for EU citizens. Life expectancy at birth for men and women grew by 4 and 3 months per year respectively between 2002 and 2008. It is also apparent that the life expectancy of men is catching up with that of women.

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

Health and health inequalities

Improvements in health are apparent in several indicators. The death rate due to chronic diseases, which constitute the leading cause of premature deaths in the EU, fell by 2.0 % per year between 2000 and 2008 for people aged less than 65. Improvements in mental health, as reflected by changes in the rate of suicides, are also observable between 2000 and 2008. The overall EU suicide rate fell annually on average by 1.9 % among older teenagers and by 3.6 % among people aged over 85 years. The exception is the middle aged, where an increase in the suicide rate, which began in 2007, has been linked to the unemployment and indebtedness resulting from the financial crisis.

Fewer people die from chronic diseases or suicide. However the financial crisis has taken its toll on the middle aged

Between 2005 and 2009 the proportion of people reporting unmet needs for healthcare fell for all income groups. Nevertheless, the proportion of the poorest who reported unmet needs for healthcare is still eight times higher than for the highest income group.

Despite improvements, cost associated with medical treatment still pose an obstacle to the poorest

Determinants of health

Production of toxic chemicals in the EU fell by 1.8 % per year on average between 2002 and 2009. However, there has been no change in their share of overall chemical production and no shift in the share of the most toxic classes of chemicals.

Despite a fall in production of toxic chemicals, no shift towards lower toxicity

Exposure of the urban population to air pollution by particulate matter fell by 0.4 % per year but remains far away from the path to the 2010 target and exposure to ozone grew by 2.8 % per year between 2000 and 2008. It is however not possible to discern clear trends as these indicators fluctuate from year to year and changes in airborne concentrations are often the consequence of natural or semi-natural causes, such as forest fires and extremes of climate.

Exposure to air pollution did not really improve in urban areas

The share of the population in the EU declaring that they suffer from excessive noise favourably declined by an average of 1.5 % per year during the period 2005 to 2009.

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

Efforts to improve health and safety in work places have resulted in progress in the EU which is essentially consistent with the target of a 25 % reduction of serious accidents at work over the period 2007 to 2012.

Climate change and energy

For the majority of the climate change and energy indicators progress since 2000 has been relatively good, particularly in the second half of the decade, while unfavourable trends continue for only a small number of indicators. Although the transformation to a low-carbon economy is already reflected in some indicators the economy of the EU remains energy- and carbon-intensive and most indicators in this theme are closely linked to economic growth. It is therefore to be expected that the economic crisis has had a considerable impact on the issues discussed in this chapter. On the whole, the changes in trends over 2008 and 2009 are not the result of profound, structural changes but rather a temporary interruption of longer term trends.

Greenhouse gas (GHG) emissions in the EU-27 declined between 2000 and 2009, and the pace is likely to be sufficient to meet the 20 % reduction target by 2020. The EU-15 is also on track to meet the collective Kyoto Protocol target of reducing GHG emissions by 8 % below 1990 levels in the commitment period 2008 to 2012. Similarly, the EU is on the way to reach the target of 20 % share of renewables in gross final energy consumption by 2020.

Favourable developments can also be seen for the greenhouse gas intensity of energy consumption, the use of renewable energy in transport, and combined heat and power. In contrast, the 2010 target of a 21 % share of renewables in electricity production is unlikely to be met even though the share rose between 2000 and 2009. The EU's dependence on energy imports ([6]) has grown considerably since 2000, with about 54 % of energy consumption being met by imports from outside the EU. The implicit tax rate on energy has fallen since 2000, which is inconsistent with the EU objective of shifting the tax burden from labour to resource use.

Table 8: Evaluation of changes in the climate change and energy theme *(EU-27, from 2000)*

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

(*) From 2006.
(**) From 2004.

([6]) Fuel needed for producing nuclear energy is not counted in energy imports.

Headline indicators

In 2009 EU-27 GHG emissions stood 17.4 % below their 1990 levels. This makes it likely that the target of reducing GHG emissions by 20 % by 2020 will be met. Furthermore in 2009, EU-15 GHG emissions stood 12.7 % below their Kyoto baseline value. Thus the EU-15 countries are likely to overachieve their collective Kyoto commitment of reducing GHG emissions by 8 % in 2008-2012.

EU-27 on track to meet 2020 GHG emissions target and EU-15 Kyoto commitments are likely to be met

Due to changes in methodology, data for the second headline indicator 'consumption of renewables' are only available from 2006 to 2008. If the current pace of change over this short period is maintained, the EU is likely to meet the target of reaching a 20 % share of renewables in gross final energy consumption set for 2020.

EU on track to meet its target for renewables in energy consumption

Climate change

With some notable exceptions, the proportions of total GHG emissions (excluding international bunkers and land use, land use change and forestry) emitted by each of the main source categories in the EU-27 have changed rather little between 1990 and 2009. The main changes have been reductions from manufacturing industries and construction (from 14.8 % to 11.5 %) and from industrial processes (from 8.3 % to 7 %) as well as, most notably, an increase from 13.8 % to 20.2 % from transport. Changes in the shares emitted by other categories have been minor.

Whilst the share of emissions from manufacturing and construction and industrial processes have fallen, the share of emissions from transport has increased

The greenhouse gas intensity of energy consumption decreased moderately between 2000 and 2009, albeit at a slower pace than during the 1990s. The switch to lower carbon fuels is mostly responsible for the decrease.

Between 2001 and 2010, the average global surface temperature was 0.46 °C above the 1961-1990 mean, making the decade the warmest ten-year period ever recorded. This follows the trend in temperature where the 2000s were warmer than the 1990s, which were warmer than the 1980s and earlier decades.

2001-2010 was the warmest decade ever recorded

Energy

The EU's dependence on imported energy remained rather constant at around 45 % in the 1990s. However, between 2000 and 2009, energy dependence increased substantially, reaching 53.9 % in 2009.

EU imports more than half of its energy

Energy demand in the EU has fallen slightly. After increasing steadily during the early 2000s, it fell between 2006 and 2009. In general, decreasing consumption of solid fuels has been compensated for by greater use of natural gas and, to some extent, renewable energies.

Energy demand in the EU has fallen slightly since 2000

The share of renewables in EU electricity production grew from 13.8 % in 2000 to 16.7 % in 2008. Despite the increase, the EU is unlikely to meet the 21 % target set for 2010. In contrast, the share of renewables in transport rose rapidly between 2006 and 2008 to 3.5 % of transport fuels. If the current growth rate were to continue, the EU would meet the 5.75 % target set for 2010. However, given that data only cover three years, this must be treated with caution.

The EU is likely to miss its target for renewables in electricity, but is on track to meet its target for renewables in transport

The development of cogeneration or combined heat and power (CHP) which combines the production of useful heat with electricity generation has been steady but slow, reaching a share of 11.4 % of gross electricity generation in 2009.

Modest progress in cogeneration

The EU's implicit tax rate on energy fell between 2000 and 2009. The decrease in the effective tax burden is inconsistent with the EU objective to shift taxation from labour onto resource and energy consumption as a policy tool to advance environmental goals and increase employment.

No shift of taxation from labour to energy

Sustainable transport

Overall, the changes since 2000 concerning sustainable transport present a rather unfavourable picture although with some favourable trends. The picture presented here is thus less harsh than that presented in the previous edition of this report, although this is largely due to the tempering effect of the economic crisis, which has had the effect of reducing the demand for transport and its negative impacts.

Reductions in energy consumption and greenhouse gas emissions between 2007 and 2008 are a consequence of the economic crisis rather than a steady long run trend towards absolute decoupling. Even if there has been progress in decoupling transport and its energy consumption from economic development, the decoupling has been only relative. Furthermore, neither freight nor passenger transport has shown any shift towards modes with lower environmental impacts. There have been substantial decreases in the average CO_2 emissions of new cars and in road accident fatalities. The continuing downward trend in emissions of nitrogen oxides and particulate matter since 2000 has even accelerated.

Table 9: 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	Transport and mobility	
	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
	Transport impacts	
	Greenhouse gas emissions from transport	Average CO_2 emissions per km from new passenger cars (***)
		Emissions of NO_x from transport
	People killed in road accidents (**)	Emissions of particulate matter from transport

(*) From 2004.
(**) From 2001.
(***) From 2007.

Headline indicator

Energy consumption of transport has grown slightly slower than GDP

The energy consumption of transport has grown more slowly than the economy since 2000 and thus the ratio between energy consumption and GDP fell moderately between 2000 and 2009, indicating a minor relative decoupling between economic development and the energy consumption of transport. However, the link between the two is still apparent from the parallel drop in energy consumption as the economy stalled in 2008.

Transport and mobility

Increased share of road in freight transport

Absolute decoupling between freight transport and the economy

Between 2000 and 2009 the modal share of inland road freight transport in the EU climbed to 77.5 %, as the shares of rail and inland waterway transport decreased slightly over the same period. These changes were accompanied by increasing transport performance (tonne-km) between 2000 and 2007, and it was only in 2008 that freight performance started to fall in line with the lower economic growth resulting from the economic crisis. Freight transport fell further in 2009, leading to an absolute decoupling between economic growth and freight transport over the period 2000 to 2009.

Relative decoupling of passenger transport and GDP

The modal shares in passenger transport remained rather stable between 2000 and 2008, although there were minor increases of car and rail transport (accounting for 83.3 % and for 7.3 % respectively in 2008) at the expense of a slight decrease in the share of buses and coaches. Passenger transport volumes in the EU followed a similar development to those of freight transport, although the decrease of 0.4 % in 2008 was more moderate than that of freight transport, which fell by 1.4 %. As passenger

transport volumes grew at a lower rate than GDP during this period, there was a relative decoupling between passenger transport volumes and GDP.

Road still takes the major share of infrastructure investment

Although the share of road and airport infrastructure investments fell from 66 % in 2000 to 59 % in 2003, it climbed to 68 % in 2009. A converse pattern of development was observed for the shares of investments in rail, inland waterways and sea ports, which fell from 34 % to 32 % over the same period.

Prices for road and rail transport services have grown faster than air transport

Between 2000 and 2010 prices for passenger transport services for road, rail and air transport services all increased substantially, albeit at different rates. The highest annual price increase was recorded for road passenger transport services (i.e. buses and coaches) with an average of 4.2 %, followed by rail (4.0 %) and air (2.8 %). Prices for the operation of personal transport equipment and purchase costs of vehicles increased by an average of 3.5 % and 0.6 % respectively between 2000 and 2010. Thus, in relative terms, prices increased less for road transport with private vehicles and aviation, the latter being the transport mode with the fastest growing energy consumption and emissions of greenhouse gases.

Transport impacts

Growth in greenhouse gas emissions from transport has slowed down

Between 2000 and 2009 greenhouse gas (GHG) emissions from transport in the EU grew more slowly than over the period 1990 to 2000. As a consequence of the reduced transport demand during the economic crisis, there were substantial reductions of transport GHG emissions in 2008 (-1.7 %) and 2009 (-2.8 %).

Progress in reducing average CO_2 emissions of new car fleet

As road dominates the total GHG emissions of transport, the development of the average CO_2 emissions of new cars plays a crucial role in reducing overall GHG emissions from transport. Some progress has been achieved and there was an average annual reduction of 4.2 % between 2007 and 2009 in the EU, with new cars emitting an average of 145.7 grams of CO_2 per km in 2009. The current reduction rates seem to be sufficient to meet the target of 130 grams of CO_2 per km by 2015.

The steady decrease of air pollutants accelerated in 2008

In contrast to the growing emissions of GHGs, emissions of noxious air pollutants such as oxides of nitrogen (NO_x) and particulate matter (PM) have been steadily falling since 1990, due to the progressive tightening of emission standards. Current levels of the emissions of NO_x ([7]) and PM2.5 ([8]) are more than 30 % lower than they were in 1990. In the figures from 2008 it is apparent that this process has even been hastened by the falling transport volumes resulting from the economic crisis.

Deaths due to road accidents continue to fall

Measures to reduce road traffic accident fatalities within the EU have led to the number of people killed being more than halved since 1991. Progress between 2007 and 2009 has been especially strong, and this has been linked to financial insecurity resulting from the economic crisis. However, progress lags behind what would be necessary to cut road fatalities by 50 % between 2001 and 2010.

Natural resources

Changes in the natural resources theme since 2000 show both favourable and unfavourable trends. On the one hand, there has been continued progress in the designation of protected areas and in water quality, and the harvesting of wood from forests remains sustainable. The abundance and diversity of common birds have stabilised, albeit in a substantially poorer state than they were in 1990 and previous decades. On the other hand, marine fish stocks remain under threat and built-up land continues to increase at the expense of areas of semi-natural land.

([7]) The oxides of nitrogen, nitric oxide (NO) and nitrogen dioxide (NO_2), are acidic gases, damaging to human health and the environment.
([8]) Fine particulate matter with an average aerodynamic diameter of up to 2.5µm. It is associated with circulatory disease in human beings.

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

Level 1	Level 2	Level 3
	Biodiversity	
	Protected areas (**)	
	Fresh water resources	
Abundance of common birds (*)	: Water abstraction	Water quality in rivers (***)
	Marine ecosystems	
Conservation of fish stocks		: Fishing capacity
	Land use	
	Increase in built-up land (****)	Forest increment and fellings

(*) EU aggregate based on 19 Member States.
(**) EU-25, from 2006.
(***) Aggregate based on 19 European countries.
(****) EU aggregate based on 23 Member States.

Headline indicators

Common bird populations are recovering, but at levels below previous decades

The EU index for all common birds has started to stabilise since 2000 following the sharp declines over previous decades. Recovery has been particularly evident in habitat generalists and forest species. On the other hand common farmland bird populations are still on the decline.

Fish catches remain outside safe biological limits

Total fish catches taken from stocks outside safe biological limits reached close to 24 % in 2009. Currently, fish catches of almost all categories exceed by far a sustainable degree of exploitation.

Biodiversity

Protected areas are approaching sufficiency

In 2010 areas designated for nature conservation in the EU-25 reached 89 % of that considered necessary to provide sufficient habitats to safeguard biodiversity. The differences in the level of implementation between older Member States and those that have most recently joined the EU is narrowing, and in 2010 the median value of all 27 Member States was 98 %. Although implementation is nearly completed in terms of area covered, progress is still needed in terms of the management of designated sites and connectivity between sites.

Fresh water resources

Freshwater quality is improving in rivers and abstraction rates have stabilised

In most of the countries for which data are available, surface water abstraction has stabilised. Groundwater extraction rates are still at high or unsustainable levels in some countries. The great variation of rates between countries can be related to geo-climatic characteristics as well as the relative importance of specific economic sectors, such as tourism and agriculture in some European regions.

From 2000 to 2008 the concentration of biodegradable organic matter and other nutrient pollutants in rivers has decreased across Europe as a whole[7], indicating a clear improvement of freshwater quality. The Urban Wastewater and Water Framework Directives are amongst the main drivers of this favourable trend.

Marine ecosystems

Despite reduction in fishing fleet, fishing capacity has not diminished

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

(9) The indicator is pan-European, including both Member and non-member States.

Land use

Areas of natural land continue to be built on

Built-up land continued to encroach on farmland and semi-natural land between 2000 and 2006. The highest rate of growth was for mine, dump and construction sites, followed by transport networks. The fragmentation of ecosystems associated with such extensive linear structures is a major pressure on biodiversity.

Forest fellings remain sustainable

Between 2000 and 2010 fellings increased slightly while there was a substantial fall of increment. This resulted in a considerable increase in the forest utilisation rate (the ratio between fellings and increment). Nevertheless, the harvesting of wood remains sustainable.

Global partnership

The overall picture presented by the indicators in the global partnership theme is rather favourable. Most of the indicators have shown a favourable tendency since 2000, in particular those on trade flows, financing for sustainable development and natural resource management. However, the EU is not on track for the headline indicator, which measures the share of gross national income dedicated to official development assistance to developing countries. Furthermore, many indicators developed unfavourably over the period 2007 to 2009, in parallel with the global economic crisis.

Table 11: Evaluation of changes in the global partnership theme *(EU-27, from 2000)*

Level 1	Level 2	Level 3
	Globalisation of trade	
	Imports from developing countries	Share of imports from least developed countries
		Subsidies for EU agriculture
	Financing for sustainable development	
Official Development Assistance	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_2 emissions per inhabitant	Assistance for water supply and sanitation (*)

(*) EU-15.
(**) EU DAC members.

Headline indicator

EU has missed its ODA target of 0.56 % of GNI in 2010

The share of gross national income (GNI) spent on official development assistance (ODA) to developing countries increased only slightly between 2005 and 2010. The EU has therefore not met its intermediary target of 0.56 % in 2010. It is also not on track to achieve the target of dedicating 0.7 % of its GNI to ODA by 2015.

Globalisation of trade

Imports from developing countries increased

The share of imports from developing countries in EU imports increased between 2000 and 2010. There was an interruption to this trend in 2009 reflecting the global economic crisis. Imports from the least-developed countries developed in line with the EU objective of increasing their share, but overall remain low. Those EU agricultural subsidies that are classified as trade-distorting by the World Trade Organisation (WTO) decreased by more than two-thirds between 2000 and 2007.

Financing for sustainable development

Overall EU-15 financing for development increased, but economic crisis had negative impact

Overall, the EU-15 provided more money to developing countries in 2009 than in 2000, reflecting the general trend among donors. Moderate progress has been made in raising the shares of low-income countries in foreign direct investment (FDI) and development assistance. However, the global economic crisis led to a decline in flows between 2007 and 2008. Most indicators had not yet reached their 2007 level again in 2009. Less development assistance was dedicated to debt relief purposes in 2009 than in 2000.

Global resource management

The gap between CO_2 emissions from the EU and from developing countries is narrowing

Indicators of global resource management showed favourable trends. The gap in CO_2 emissions per inhabitant in the EU and developing countries has narrowed, but remains substantial. The closing was due to an increase in CO_2 emissions in developing countries and a decrease in the EU. Assistance for water supply and sanitation increased substantially between 2000 and 2009.

Good governance

The trends observed in the good governance theme since 2000 have been mixed. There have been favourable trends as regards infringement cases as well as e-government availability and usage. In addition, the transposition of EU law has been above the target rate. There have, however, been negative trends with regard to voter turnout in national parliamentary elections, which is generally falling. Moreover, trends in the ratio of environmental to labour taxes show that a general shift towards a higher share of environmental taxes in total tax revenues has not been achieved.

Table 12: Evaluation of changes in the good governance theme *(EU-27, from 2000)*

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

(*) From 2007.
(**) From 2005.

Policy coherence and effectiveness

In 2009 half of EU 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.

European Parliament is most trusted among main EU institutions

Between 2007 and 2009 the number of new infringement cases in the EU decreased considerably from 212 to 142. This was mainly due to reductions in two policy areas: Internal market, and Justice and home affairs. There were, however, substantial differences between the different policy sectors policy sectors.

In 2001 the European Council set a target of a 98.5 % transposition rate of EU law by national authorities. Although in 2009 the overall rate was slightly above the 98.5 % target, several policy sectors showed lower transposition rates.

Decrease in new infringement cases and transposition of EU law above target level

Openness and participation

Voter turnout in national parliamentary elections decreased slightly in the EU as a whole between 2000 and 2010. Generally, there has been stronger participation in national elections than in EU parliamentary elections.

Slight decrease in voter turnout in national elections

E-government availability of basic public services is extensive in the EU and has been steadily increasing since 2002 and its usage by individual citizens has increased between 2005 and 2010. There exist, however, considerable differences between Member States.

E-government availability and usage are increasing

Economic instruments

There was a shift from environmental to labour taxes in the EU between 2000 and 2009. This is inconsistent with EU Sustainable Development Strategy objective to shift taxation from labour to resource and energy consumption and/or pollution.

The ratio of environmental to labour taxes has decreased

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' ([1]). It is a fundamental and overarching objective of the European Union, enshrined in the Treaty ([2]). 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 ([3]) reaffirmed the commitment to integrate environmental concerns into other EU policies. Further steps were taken when the EU Sustainable Development Strategy was adopted by the 2001 Gothenburg European Council ([4]), following which the European Commission's White Paper on governance ([5]) and a communication on the EU's contribution to global sustainable development ([6]) were adopted at the 2002 Barcelona European Council ([7]). 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 ([8]) in preparation for the adoption of a renewed Strategy ([9]) in 2006, which reaffirmed the overall aim of achieving a continuous improvement in the quality of life and well-being on Earth for present and 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.

([1]) Report of the World Commission on Environment and Development to the General Assembly of the United Nations, *Our Common Future*,1987.
([2]) Article 2 of the Treaty on European Union.
([3]) Cardiff European Council, *Presidency conclusions*, 15 and 16 June 1998.
([4]) Göteborg European Council, *Presidency conclusions*, 15 and 16 June 2001.
([5]) European Commission, *European Governance – A White Paper*, COM(2001) 428.
([6]) Commission communication, *Towards a global partnership for sustainable development*, COM(2002) 82.
([7]) Barcelona European Council, *Presidency conclusions*, 15 and 16 March 2002.
([8]) Commission communication, *On the review of the Sustainable Development Strategy – A platform for action*, COM(2005) 658.
([9]) Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) — Renewed Strategy*, 10917/06.

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 used as basis for assessing progress towards sustainable development in the ten thematic chapters of this report.

Key objectives and policy guiding principles

The SDS is underpinned by four key objectives and ten policy guiding principles agreed by the June 2005 European Council ([10]):

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 the 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

([10]) Brussels European Council, *Presidency conclusions*, 16 and 17 June 2005.

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 should therefore be updated every two years.

In its first stocktaking, the Commission published a progress report in October 2007 ([11]), 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 ([12]).

The Commission's second stocktaking in July 2009 ([13]) pointed out that despite considerable efforts to include action for sustainable development in major EU policy areas, unsustainable trends persist and the EU still needs to intensify its efforts. The 2009 review also opened the debate on how to take sustainable development into the future and made proposals as to how other EU strategies could be better integrated with the EU SDS.

These recommendations were taken further in the Presidency Report from the 2009 December European Council ([14]). The report reaffirms that the EU 'SDS constitutes a long-term vision and an overarching policy framework providing guidance for all EU policies and strategies and including a global dimension, with a time frame of up to 2050. By tackling long-term trends it serves as an early warning instrument and a policy driver to bring about necessary reform and short-term policy action'. Furthermore it should 'ensure coherence between short and long-term objectives and between different sectors'. The Commission was invited 'to continue to analyse and to propose appropriate measures to enhance the links and synergies between the SDS and the Europe 2020 Strategy' and was 'encouraged to intensify the ongoing work on complementing GDP to better reflect social and environmental development and to report back on the state of play in conjunction with the 2011 review of the SDS'. It identifies a need to further develop the SDIs, both in terms of quality and comparability. In view of the Rio+20 conference that will be held in 2012 (see Box 0.1), the Commission was 'invited to explore how to better integrate the global perspective into all SDS areas within the context of future reviews'. It also points to 'a need to develop new indicators in order to better reflect the increased and diversified relations between the EU and the rest of the world'.

([11]) Commission communication, *Progress Report on the Sustainable Development Strategy 2007*, COM(2007) 642.
([12]) Commission staff working document, *Accompanying document to the Progress Report on the European Union Sustainable Development Strategy 2007*, SEC(2007) 1416.
([13]) Commission communication, *Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development*, COM(2009) 400.
([14]) Council of the European Union, *2009 Review of the EU Sustainable Development Strategy – Presidency Report*, 16818/09.

Box 0.1: Rio+20 – United Nations Conference on Sustainable Development in 2012 ([15])

The United Nations Conference on Sustainable Development will take place in Brazil on 4-6 June 2012 to mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro and the 10th anniversary of the 2002 World Summit on Sustainable Development in Johannesburg. It is envisaged as a conference at the highest possible level, including Heads of State and Government or other representatives, in order to result in a focused political document. The objective of the conference is to secure renewed political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and address new and emerging challenges.

The conference will focus on two themes:

- a green economy in the context of sustainable development and poverty eradication; and
- the institutional framework for sustainable development.

A green economy in the context of sustainable development and poverty eradication

Sustainable development aims at intragenerational and intergenerational equity through a balanced consideration of social, economic and environmental aspirations. While growing prosperity has made it possible for countries to address many social and environmental problems, extreme poverty still exists in many parts of the world and climate change, biodiversity loss and disruption of the nitrogen cycle are looming global problems. The concept of green economy is primarily concerned with the intersection between environment and the economy. Nevertheless, the objective of economic development is to assure human well-being, and even if broad-based economic growth is seen as the most effective contributor to poverty eradication, that growth will need to be less energy and resource intensive and less polluting. In the long term a development path limiting adverse environmental impacts will be more conducive to prosperity and poverty alleviation.

The institutional framework for sustainable development

The institutional framework for sustainable development covers a wide range of formal and less formal bodies, organisations, networks and arrangements that are involved in policy making or implementation activities. This framework is fragmented and lacks coherence and coordination and there is a widely recognised need for it to be strengthened. Insufficient progress has been made in integrating sustainable development into policy making and implementation at all levels. Member States should have an active role in providing political guidance to the United Nations system for overcoming this institutional fragmentation and lack of integration of the three most classical pillars of sustainable development.

In June 2011, the Commission adopted a communication ([16]) preparing the ground for the EU's position at the conference. On the basis of the communication, the Commission will work together with Council and Parliament to build a consistent EU position proposing concrete policies and actions for greening the economy to be discussed at Rio+20.

The EU set of Sustainable Development Indicators (SDIs)

Monitoring progress in the implementation of the EU Sustainable Development Strategy

Monitoring progress in the implementation of the EU SDS is an integral part of the Strategy, and it is foreseen that Eurostat will produce a monitoring report every two years, based on the EU set of SDIs. The current edition of the report updates and adapts the previous edition of 2009, 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 intended to put the EU on a path towards sustainable development. Given these objectives and targets, this report provides a quantitative assessment of whether the EU is moving in the right direction as reflected in the developments revealed by the EU SDIs.

([15]) The information presented here is taken principally from the document 'Objective and themes of the United Nations Conference on Sustainable Development – Report of the Secretary-General' and from the Rio+20 website.
([16]) Commission communication, *Rio+20: towards the green economy and better governance*, COM(2011) 363.

Background

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 ([17]) and again in 2001 ([18]).

A first EU-oriented set of SDIs was proposed following the adoption of the initial EU SDS of 2001 and was endorsed by the Commission in 2005 ([19]), who anticipated 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, some changes have been made to better reflect the current EU SDS, although 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 framework. Even if 'social inclusion, demography and migration' are considered together in the renewed Strategy they continue to be represented by two separate themes ('social inclusion' and 'demographic changes') in the framework. This division 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.

The SDI framework follows a gradient from the economic, through the social and environmental to the global and institutional dimensions:

- socioeconomic development,
- sustainable consumption and production,
- social inclusion,
- demographic changes,
- public health,
- climate change and energy,
- sustainable transport,

([17]) Eurostat, *Indicators of sustainable development: A pilot study following the methodology of the United Nations Commission on Sustainable Development*, Luxembourg, Office for Official Publications of the European Union, 1997.
([18]) Eurostat, *Measuring progress towards a more sustainable Europe: Proposed indicators for sustainable development*, Luxembourg, Office for Official Publications of the European Union, 2001.
([19]) Communication from Mr Almunia, *Sustainable development indicators to monitor the implementation of the EU Sustainable Development Strategy*, SEC(2005) 161.

- natural resources,
- global partnership,
- good governance.

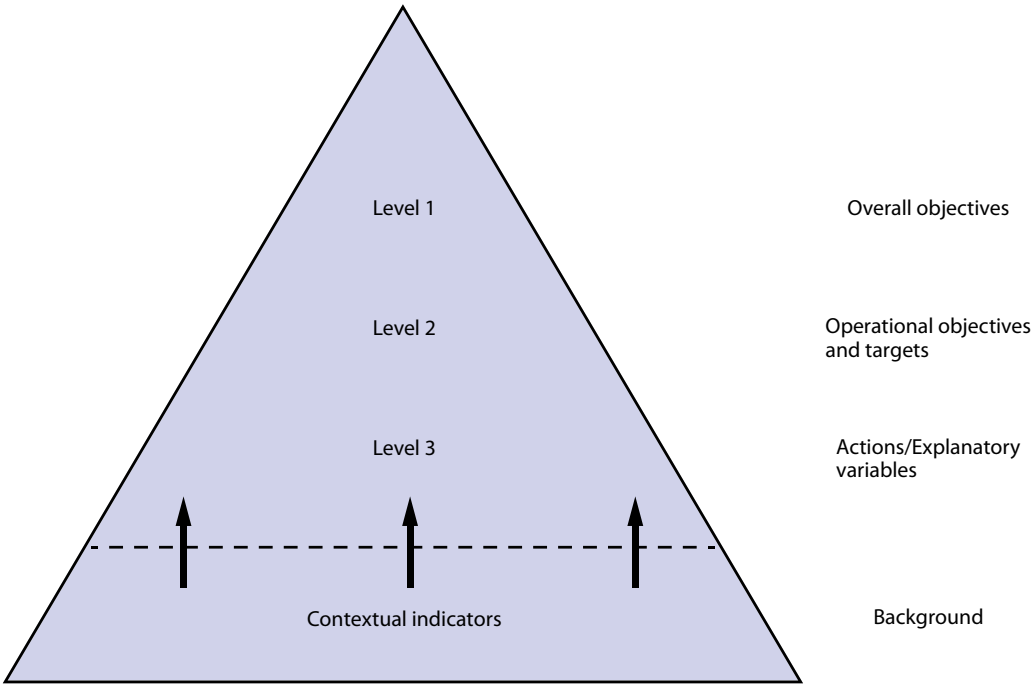
Each theme is further divided into subthemes to organise the set according to the operational objectives and actions of the EU SDS.

The different kinds of indicators

The set of EU SDIs 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. Breakdowns 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. They are included in the set because they provide valuable background information on issues having direct relevance for sustainable development policies and are helpful to an understanding of the topic.

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 indicators 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 II 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 data can be consulted and downloaded from the Eurostat SDI webpages (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:

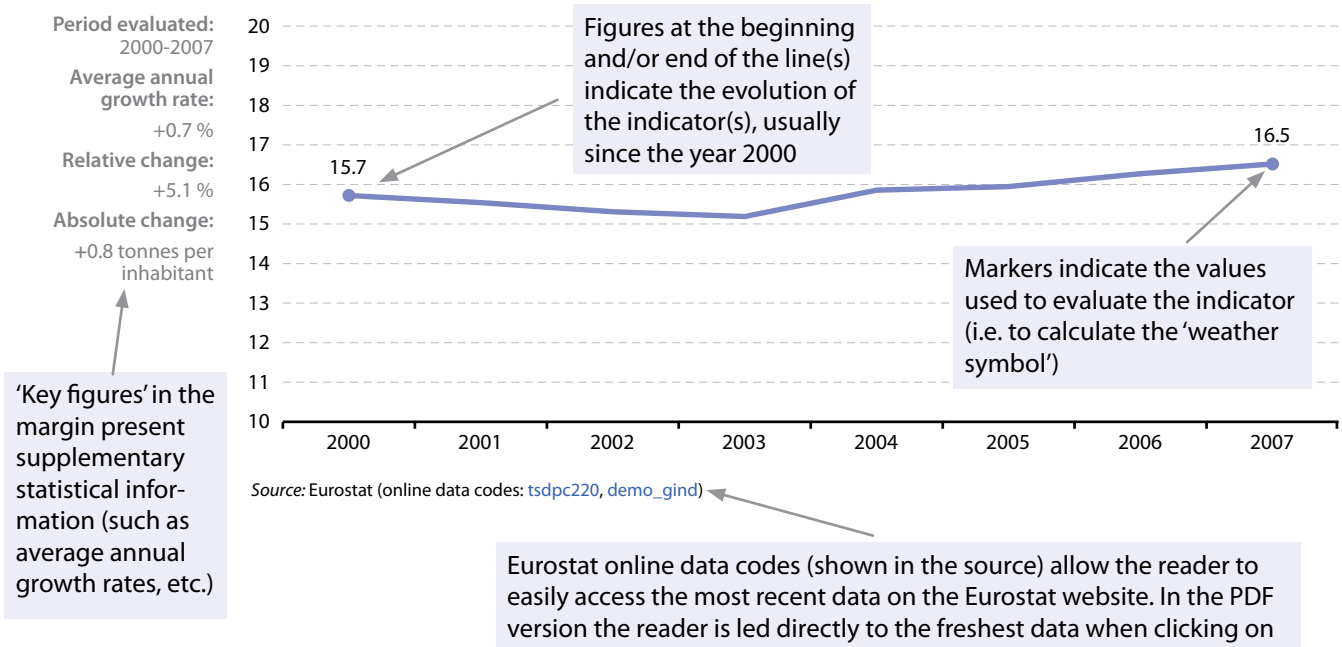
- Each chapter begins with an 'Overview of main changes' summarising the evaluation of the individual indicators. It presents a visual assessment of the changes since 2000 by drawing on the evaluation categories described below.
- The following section describes how the theme of the chapter is important to sustainable development, and how the issues in the chapter are related to each other and to the issues addressed in other chapters. These linkages are not comprehensive, and there is not necessarily an empirical basis behind the links suggested. They should be considered as illustrative.
- The 'Further reading' section points readers to a selection of relevant policy documents, statistical publications and scientific papers.
- 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 and level 2 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 3 indicators, for which generally only the evolution of the EU aggregate over time is presented. 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. For a country breakdown readers are referred to the pages devoted to SDI on the Eurostat website.
- Methodological notes are provided at the end of each chapter. They have been deliberately kept short and readers interested in more detail should refer to the SDI pages on the Eurostat website.

Graphical representation of the indicators

The graphs included in this report are complemented with additional information to make the evaluation (see next section) and the changes that have occurred over time better visible. The presentation of the graphs is slightly different depending on whether a quantitative target is available for the indicator in question or not.

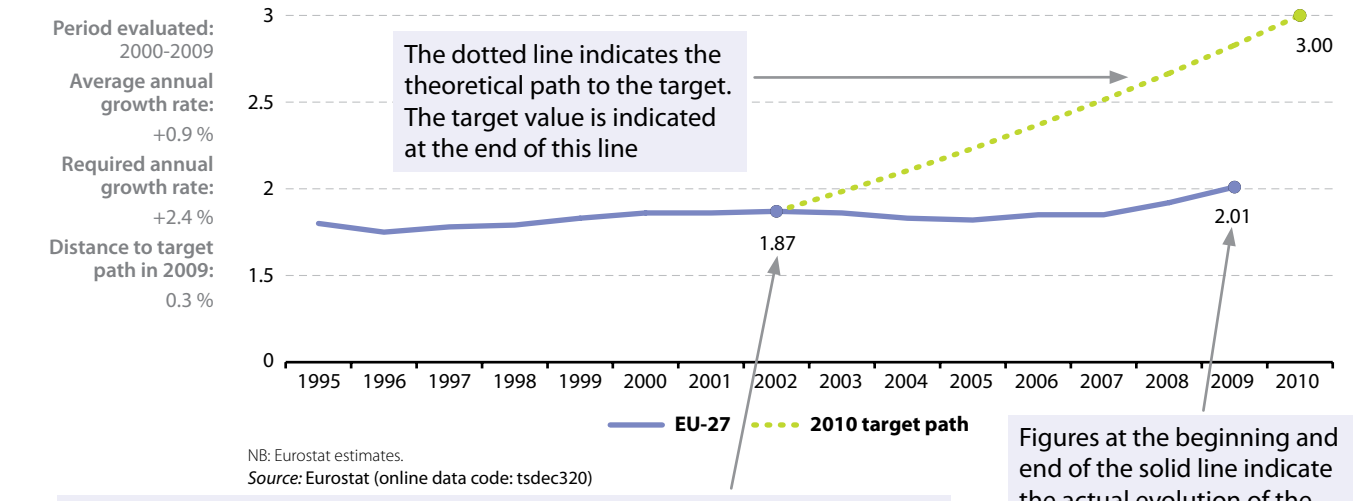
a) Graphical representation of indicators without quantitative target

Figure 2.4: Domestic material consumption per capita, EU-27
(tonnes per inhabitant)



b) Graphical representation of indicators with quantitative target

Figure 1.12: Total R&D expenditure, EU-27 (*% of GDP*)



Data coverage

This report covers a large part of the set of EU SDIs. Since this report seeks to evaluate progress towards the EU SDS, data are only presented for current EU Member States and evaluations are based on EU-27 wherever possible. In cases where 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 commentary and evaluation 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.

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

Whenever data available on the Eurostat website have been used, the reference to the online data 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 online data code.) Entering the data code in the search box on the Eurostat website will direct readers to the appropriate information.

Data were extracted in July 2011. 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 ([20]).

Evaluation of indicators

What is evaluated?

The principal purpose of this publication is to assess progress towards sustainable development based on the objectives and targets defined in the EU Sustainable Development Strategy and other relevant policy initiatives (such as the Europe 2020 Strategy). The 'sustainability' ([21]) of the situation at any point in time is not the object of evaluation, but rather the relative direction and rate of change 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.

Ideally, each indicator would be evaluated against either a quantitative target set within the political process or a scientifically established threshold. However, many of the objectives of the EU SDS lack an explicit quantified and measurable target. In these cases, the indicator is evaluated according to a set of common and objective rules. These rules, although imperfect, provide a simple, transparent, consistent and easily understandable approach across the report. Importantly, the indicators are evaluated on the basis of their evolution over time, i.e. it is the change over time that is assessed, not the absolute level of an indicator at a specific point in time.

How is an indicator evaluated?

The report evaluates progress by means of four categories ([22]) depending on how favourable or unfavourable the developments have been over recent years. The four categories are represented visually by means of weather icons:

([20]) There are exceptions to this rule, such as the headline indicator of the 'climate change and energy' theme, *greenhouse gas emissions*, which is presented as index based on the year 1990 and the Kyoto base year.

([21]) The concept of sustainable development should be distinguished from that of sustainability. 'Sustainability' is a property of a system, whereby it is maintained in a particular state through time. The concept of sustainable development refers to a process involving 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.

([22]) Decoupling indicators are evaluated according to three categories only; see detailed description below.

Table 0.2: Categories and associated weather symbols for the evaluation of the indicators

Symbol	
	Changes are clearly favourable in relation to SD objectives
	No or moderately favourable changes in relation to SD objectives
	Changes are moderately unfavourable in relation to SD objectives
	Changes are clearly unfavourable in relation to SD objectives
:	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 SDS ([23]). 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 ([24]). 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 have 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. Depending on the type of indicator and the presence or absence of a quantitative target, three different calculation methods have been applied:

1. Indicators without quantitative targets:

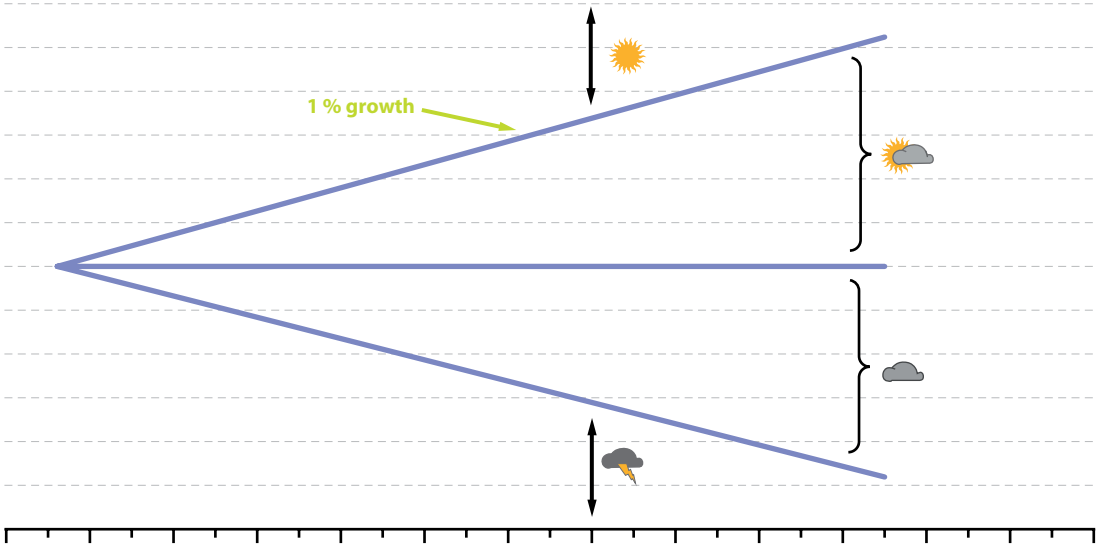
The average annual growth rate, in percentage terms, between 2000 and the latest year for which data are available is calculated. A change is supposed to be significant (clearly favourable or unfavourable) if the average annual growth rate is greater than 1 % in absolute terms. If it is between 0 % and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

About three-quarters of the indicators presented in this report are evaluated based on this method.

([23]) 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 EU SDS in 2001.

([24]) EU aggregates are back-calculated when sufficient information is available. For example, 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 note 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).

Figure 0.2: Schematic representation of the evaluation of indicators without quantitative target

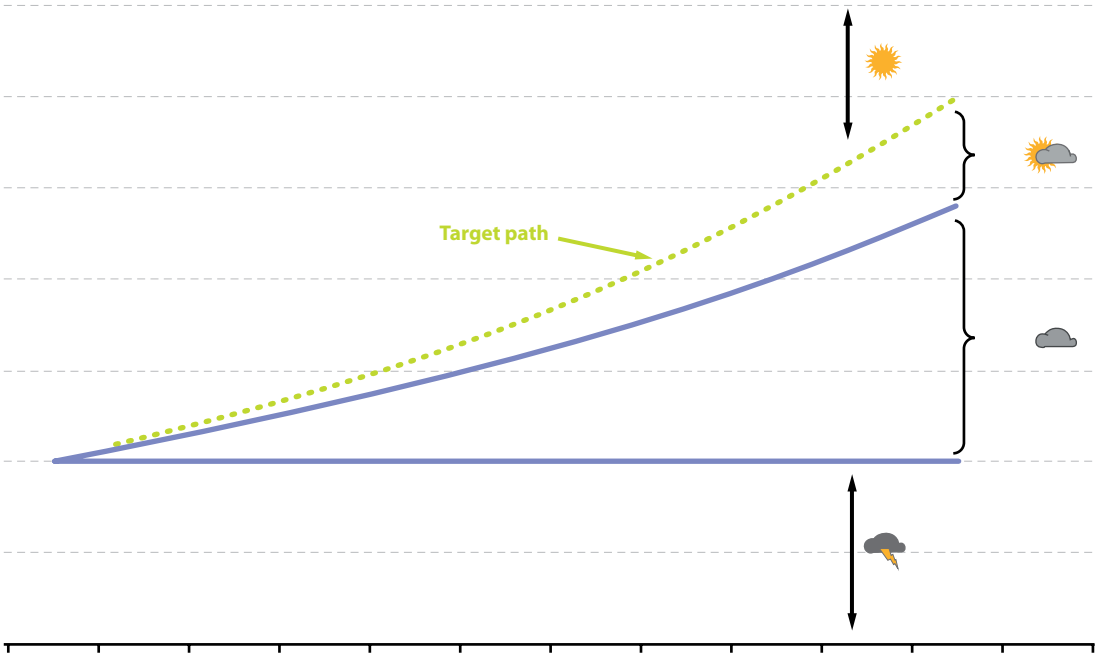


2. Indicators with quantitative targets:

When there is a clear quantitative target associated with a policy objective, the evolution of the indicator is assessed in relation to the theoretical 'path' leading to the target. The assessment is based on the deviation of the actual evolution of the indicator from the theoretical 'target path' as follows: the average annual growth rate, in percentage terms, between 2000 and the latest year for which data are available is calculated as a proportion of the theoretical average annual growth rate that would be required to meet the target in the target year. 100 % or above is evaluated as 'on target path' (clearly favourable), between 80 and 100 % 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.

This method has been applied for about 20 % of the indicators presented in this report.

Figure 0.3: Schematic representation of the evaluation of indicators with quantitative target



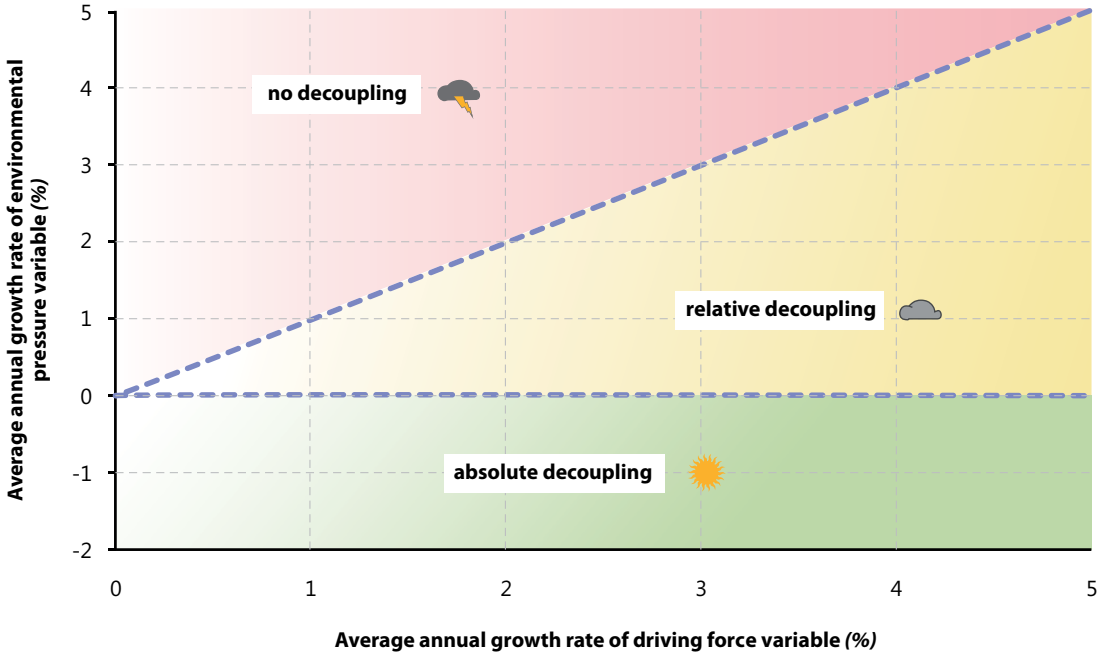
3. Decoupling indicators:

Indicators intended to measure decoupling (see Box 0.3 for an explanation of the terminology) are evaluated according to the extent to which decoupling has occurred (i.e. how far the connection between a particular variable and economic growth has been broken). 'Absolute decoupling' is the situation where the pressure on the environment decreases, even if the economy is growing, and is evaluated as 'clearly favourable'. Two other situations are interpreted as unfavourable trends as they both refer to an increase in the pressure on the environment. When the pressure on the environment increases but at a lower rate than the growth of the economic variable, it is referred to as 'relative decoupling' and is evaluated as 'moderately unfavourable'. And when the pressure on the environment increases at the same or a higher rate than the growth of the economic variable it is referred to as a situation of no decoupling and is evaluated as 'clearly unfavourable'.

This method has been applied for evaluating the following indicators:

- **Energy intensity** (theme 'socioeconomic development')
- **Resource productivity** (headline indicator of the theme 'sustainable consumption and production')
- **Greenhouse gas emissions intensity of energy consumption** (theme 'climate change and energy')
- **Energy consumption of transport relative to GDP** (headline indicator of the theme 'sustainable transport')
- **Volumes of freight and passenger transport relative to GDP** (theme 'sustainable transport')

Figure 0.4: Schematic representation of the evaluation of decoupling indicators



Box 0.3: Decoupling

The term 'decoupling' refers to the breaking of the link between two variables – often referred to as driving force (mainly economic growth expressed in terms of GDP) and environmental pressures (such as generation of waste, emission of pollutants to air or water, use of natural resources such as materials, energy or land). The purpose of decoupling indicators is to illustrate the interdependence between two different spheres (e.g. economic and environmental).

In methodological terms, decoupling is expressed as the division of an environmental pressure variable (numerator) by an (economic) driver variable (denominator).

Decoupling occurs when the growth rate of the driving force (e.g. GDP) exceeds the growth rate of the environmental pressure over a certain timeframe.

Decoupling can be either absolute or relative. Absolute decoupling implies that 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.

1 Socioeconomic development

'Promote a prosperous, knowledge-rich, competitive and eco-efficient economy, which provides high living standards and full and high-quality employment throughout the European Union' (key objective of the EU Sustainable Development Strategy concerning 'economic prosperity')

Overview of main changes

Many of the long-term trends in the socioeconomic development theme have been influenced, either positively or negatively, by the recent global economic and financial crisis. In this respect trends have deteriorated in the short term in particular in investment, employment and unemployment, as well as in real GDP per capita and labour productivity, even if these last two have started to pick up again. On the other hand, improvements have been seen in R&D expenditure and energy intensity, and briefly in household saving.

Table 1.1: Evaluation of changes in the socioeconomic development theme *(EU-27, from 2000)* ([1])

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

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

A period of rapid economic growth stalled with the financial crisis

Slow growth in 2010

Between 2000 and 2010, real GDP per capita for the EU as a whole grew by 0.9 % per year on average, but there were wide variations in the growth rate across the EU. During the economic upswing from 2003 to 2007, growth rates rose to 2.7 %, although several eastern European countries grew much faster. However, as a reaction to the economic crisis, GDP per capita stalled in 2008 and fell sharply by -4.6 % in 2009. Hardest hit by the crisis were the fastest-growing eastern European Member States. Slow growth was experienced in the EU as a whole and in most Member States during 2010, although Ireland, Greece, Spain and Romania experienced negative growth.

Economic development

Investment remained fairly stable expressed as a share of GDP

Between 2000 and 2009, the share of investment in GDP followed the economic cycle, in particular due to business investment. After reaching a peak of 21.7 % in 2007, it fell over 2008 and 2009 to a level of 19.4 % mainly due to a cutback in business investment in response to the economic crisis.

Regional disparities in economic activity diminished

Regional disparities in GDP in the EU fell from 35.5 % to 32.7 % during the period 2000 to 2007. Together with the reduction of regional disparities in employment it suggests a growing convergence of EU regions. Within-country dispersion of regional GDP remained high, in particular in eastern European Member States, where the rapid transition into market economies has led to an increasingly uneven distribution of wealth.

Saving rate saw an upturn in response to the economic crisis

For most of the period 2000 to 2010, household saving as a share of disposable income in the EU fell steadily; however, it rose slightly in 2008 and considerably in 2009 as a response to the financial crisis. In 2010 the level of household savings fell again, almost to 2004 levels. Differences across Member States remain significant.

Innovation, competitiveness and eco-efficiency

Labour productivity slowed with the crisis

Labour productivity in the EU rose on average by 1.1. % per year between 2000 and 2010. Although it grew by up to 1.7 % or 1.8 % per year in several years, mostly due to eastern European Member States catching up, it started to fall in 2008 and in 2009 dropped by 1.2 %. In 2010 it grew by 1.6 %.

R&D expenditure lags behind the target path

For most of the period between 2000 and 2009, the share of R&D expenditure in GDP remained fairly stable for the EU as a whole at between 1.8 and 1.9 %. In 2008 and 2009 R&D expenditure improved slightly.

Absolute decoupling of energy consumption from economic growth

Between 2000 and 2009 the energy intensity of the EU decreased steadily, in some years by as much as 2.5 %, resulting in an absolute decoupling of gross inland energy consumption from GDP growth.

Employment

Progress towards the 75 % employment target hindered by economic crisis

Employment in the EU rose from 66.6 % in 2000 to 70.4 % in 2008, but had fallen back to 68.6 % by 2010. Men, young people and persons with lower education were particularly affected.

Gender gap in employment and unemployment is closing

Over the period 2000 to 2010, female employment rose steadily from 57.3 % to 62.1 %, narrowing the gender gap. Considerable differences remain between Member States.

Regional disparities in employment rate fell from 13.0 % in 2000 to 11.8 % in 2009. Improvement has been achieved by the progressively more stable position of women in regional economies.

Achievements in combating unemployment thwarted by the economic crisis

On average, unemployment increased in the EU between 2000 and 2010. Although it fell to low levels following the economic upturn of 2003 to 2007, in response to the economic crisis, it jumped in 2009 and stabilised in 2010, to levels higher than in 2000.

Socioeconomic development and sustainable development

Socioeconomic development is necessary for sustainable development. It focuses on creating an economy that is innovative, eco-efficient and provides high living standards and full, high-quality employment. During recent decades, it has been recognised that any development that erodes environmental or social assets is unsustainable.

Socioeconomic development is the primary way to provide people with the means to pursue their aspirations

Sustainable development is concerned with ensuring long-term human well-being, which necessarily involves confronting the challenges of limited natural resources and global poverty. Even if each individual, society and generation has a different understanding of the concept of well-being, some basic needs can be recognised. First, people need the ability to shape their own lives. Having a good standard of living, a long and healthy life, access to education, participation in the social and political life of their communities and paid work provide people with the opportunities to achieve their goals, hopes and aspirations ([2]). People also need a sense of self-worth through meaningful participation in their social environment, whether at the workplace, in the local community or within the family. A productive job provides sense of self-worth and inclusion in society. Inequality in access to resources also affects people's well-being and leads to social exclusion, which is why achieving social and economic cohesion to reduce disparities between regions and social groups also contributes to well-being.

Economic assets need to be complemented by social and environmental assets in ensuring human well-being

In addition to human capital (knowledge, skills, health) and physical capital (infrastructure, machinery, buildings), the environmental and social assets of society contribute indirectly to well-being by providing the inputs of economic processes that create goods and services. Directly, they provide ecosystem services and a rich and affirming social environment. Social and environmental issues, when left unaddressed and to accumulate, significantly affect well-being in the long-term and can even have irreversible consequences, such as may be the case with climate change.

Socioeconomic development is strongly linked to equity within and across generations

A society's economic resources determine its ability to meet its population's material needs, provide employment and invest in environmental and social assets. They also determine whether it can achieve the scientific and technological innovation needed to create a low-carbon and resource-efficient economy – an objective of the EU. In this respect, two aspects are crucial in socioeconomic development. First, the balance between consuming now and investing in the future will affect intergenerational distribution of resources and is tied to the *sustainability* part of sustainable development. Second, the fairness of distribution of all asset types, as well as the risks and benefits of socioeconomic development, is an issue of intragenerational distribution and represents the *development* part of sustainable development.

Ageing population contributes to the pressures for economic growth

The EU economy also faces the 'ageing population problem'. Lower fertility rates and longer life expectancy over the last few decades have reduced the proportion of the working population and increased the old-age-dependency ratio. At the same time, continued economic growth has been seen as critical to maintaining economic prosperity, resulting in pressure to increase employment, labour productivity and working hours. The pressure to restore economic growth is a major concern, particularly in the current economic downturn. However, short-term economic interests are often cited as the major driver of unsustainable development, putting further strain on social and environmental assets. Therefore, under the broad term 'post-growth society', civil society and academia are discussing the implications of placing a central emphasis on people's long-term well-being with the aim of restoring and developing social and environmental assets ([3]). The bottom-line requirement is to turn the ratio between the pace of economic growth and of the material and energy intensity of the economy to achieve absolute decoupling in a socially equitable manner.

([2]) See in this respect the webpages on the human development concept based on the work of the economists Mahbub ul Haq and Amartya Sen (http://hdr.undp.org/en/humandev/).

([3]) See for example: Jackson, T. *Prosperity without growth: economics for a finite planet*, London, Earthscan, 2009; Victor, P. *Managing without growth: slower by design, not disaster*, Cheltenham, Edward Elgar Publishing Limited, 2008.

Economic developments over the last decade allow this chapter to base analyses on an entire economic cycle. Several indicators (GDP per capita, investment or household saving in particular) appear linked to the economic cycle, either directly or indirectly, in some cases with a time lag. Employment and unemployment rates have also shown a strong, although delayed, reaction to the economic cycle, improving during the economic upswing.

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 economic crisis since 2008. The economic downturn between 2000 and 2003 has been 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, during the economic upswing between 2003 and 2007, GDP per capita growth rose overall, productivity growth increased and investment recovered, accompanied by low unemployment rates and decreasing disparities in regional employment. Although economic growth rates were not as high as during the previous upswing, several socioeconomic indicators improved, including employment and unemployment indicators. Regarding the recent economic crisis, numerous short-term effects and policy responses are observed in this report.

Economic prosperity is one of the **EU Sustainable Development Strategy's** key objectives. The aim is to promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy, which provides high living standards and full and high-quality employment throughout the EU.

In December 2008, the European Council adopted the **European Economic Recovery Plan**, serving as a combined short-term (2009 to 2010) and longer-term counter-cyclical macroeconomic response to the crisis. Being anchored in the Stability and Growth Pact and the Lisbon Strategy for Growth and Jobs, it contained measures to immediately **boost demand, save jobs, and restore confidence in the economy** as well as 'smart investment' measures to yield **higher growth and sustainable prosperity** in the longer term in the four areas of the Lisbon Strategy: 'people', 'business', 'infrastructure and energy', and 'research and innovation'.

In spring 2010 the Commission launched the **Europe 2020 Strategy** in order to bring the EU out of the crisis and prepare for the next decade through smart, sustainable and inclusive growth. It is described in more detail in the Introduction chapter.

Further reading on socioeconomic development

Commission communication, *Cohesion policy: investing in the real economy*, COM(2008) 876

Commission communication, *Renewed social agenda: opportunities, access and solidarity in 21st century Europe*, COM(2008) 412

Commission communication, *A shared commitment for employment*, COM(2009) 257

Commission communication, *GDP and beyond: Measuring progress in a changing world*, COM(2009) 433

Commission staff working document, *European Competitiveness Report 2010*, SEC(2010) 1276

Eurostat, *Science, Technology and Innovation in Europe*, Luxembourg, Office for Official Publications of the European Union, 2010

Eurostat, *The Social Situation in the European Union 2009*, Luxembourg, Office for Official Publications of the European Union, 2010

Eurostat, *European economic statistics, 2010 edition*, Luxembourg, Office for Official Publications of the European Union, 2011

Report of the Commission on the Measurement of Economic Performance and Social Progress, 2009.

United Nations, *Analysing and measuring social inclusion in a global context*, New York, United Nations publication, 2010

Real GDP per capita

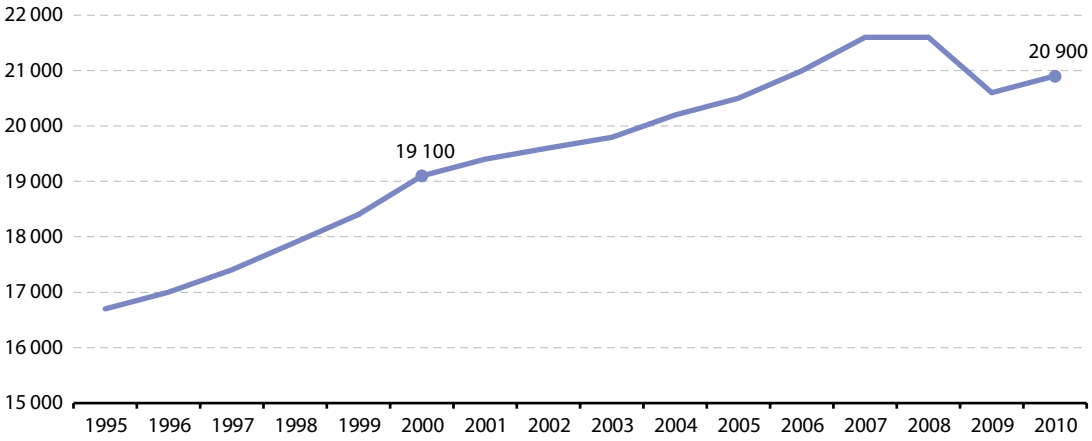
Between 2000 and 2010 real GDP per capita grew in the EU. The 2007 peak in economic growth was followed by a decline in 2009 and slow growth in 2010

Commentary

Real gross domestic product (GDP) per capita grew in every year from 2000 to 2007 until the impact of the global economic and financial crisis began to be felt in 2008. The growth of GDP per capita is a measure of the dynamism of an economy and its capacity to create new jobs. It reflects the phases of the economic cycle. After the economic peak of 2000, GDP per capita grew rather slowly during the economic downturn between 2000 and 2003. This was followed by a period of higher growth rates until 2007. However, with the onset of the crisis, GDP per capita grew by only 0.1 % in 2008 and fell by -4.6 % in 2009 down to a level similar to that of 2005. GDP per capita grew by 1.6 % in 2010, and short-term statistics show 2.2 % growth of GDP in the first quarter of 2011 as compared with the same quarter of the previous year, but only 1.7 % in the second quarter ([4]).

As a result of the crisis, real GDP per capita fell close to the 2005 level in 2009; despite recovery it had not returned to the pre-crisis level by 2010

Figure 1.1: Real GDP per capita, EU-27
(EUR per inhabitant)



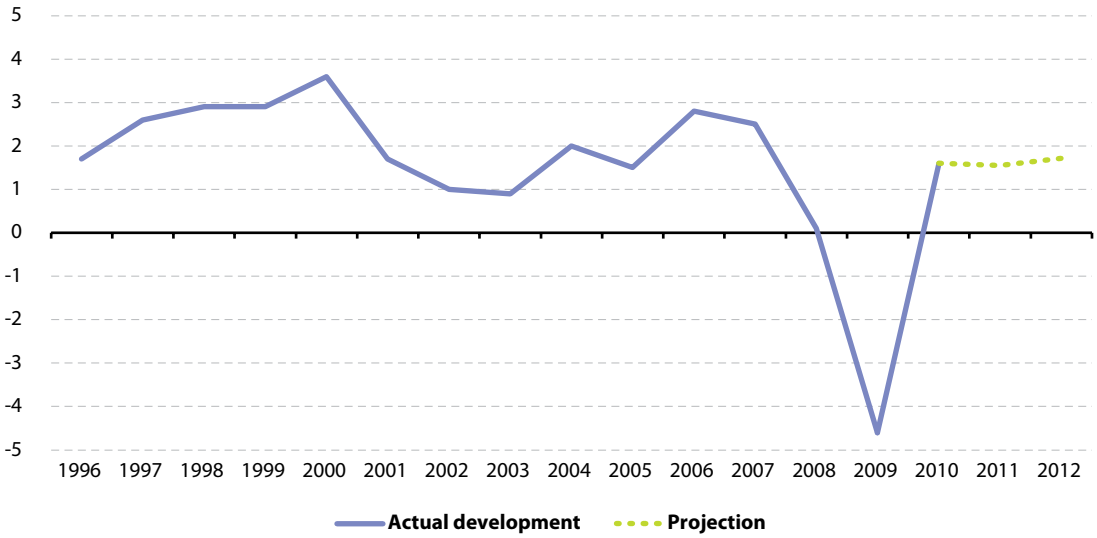
Period evaluated: 2000-2010
Average annual growth rate: +0.9 %
Relative change: +9.4 %
Absolute change: +EUR 1 800

Source: Eurostat (online data code: tsdec100)

([4]) Eurostat news release, Euro-indicators 118/2011, *Euro area and EU-27 GDP up by 0.2%*, 16 August 2011.

Figure 1.2: Real GDP per capita, EU-27
(% change on previous year)

Change over period 2000-2010:
Highest annual growth rate: 2000: +3.6 %
Lowest annual growth rate: 2009: -4.6 %
Average annual growth rate: +0.9 %



NB: 2011-2012 data are forecasts published on 13 May 2011 by the European Commission, Directorate-General for Economic and Financial Affairs ([5]).

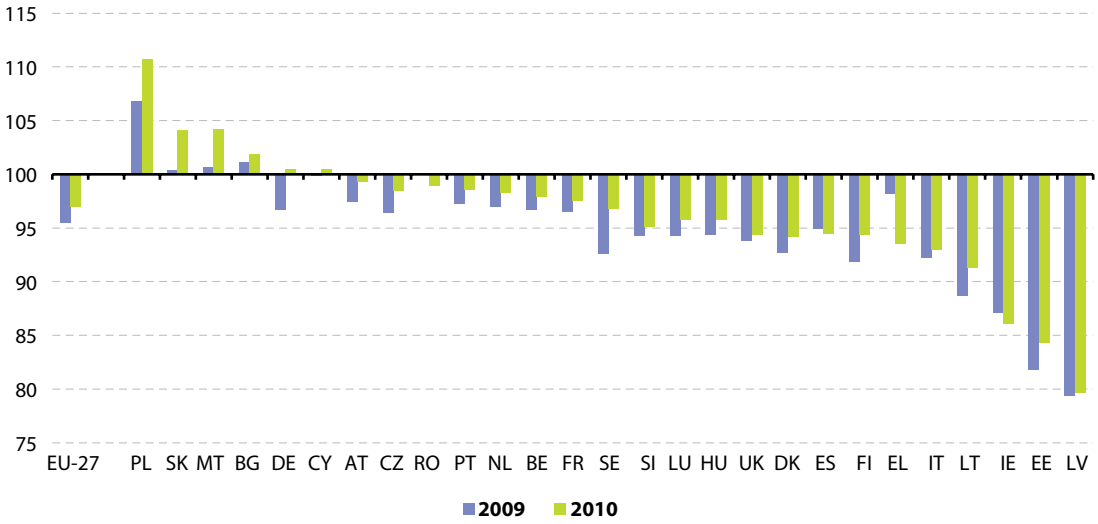
Source: Eurostat (online data code: tsdec100)

Financial crisis has hit particularly fast-growing eastern European Member States

Some countries were hit harder by the economic crisis than others. A large slump in per capita GDP occurred especially in high-growth countries dependent on exports (mostly eastern European Member States whose economic output is expected to 'catch up' with that of the more developed Member States). GDP contraction in most western European Members States extended over four or five quarters before growth resumed. The picture has been more varied in eastern European Member States. Particularly affected by the crisis in terms of GDP per capita were Latvia (with the previous GDP per capita growth rate between 2000 and 2007 being 9.4 % on average), Estonia (8.8 %), Ireland (4.1 %), Lithuania (8.1 %) and Finland (3.2 %). However, some eastern European countries (in particular Poland, Bulgaria, Slovakia and Romania) were hit less severely, due in part to lower current account deficits and external debts at the start of the crisis, stricter banking policies, lower dependence on stock exchange performance and exports, more stable domestic demand and modest exchange rate depreciation (in Member States outside the Euro area). A moderate recovery began in 2010 for most EU countries, with the exception of Greece, Ireland, Latvia, Romania and Spain.

([5]) *European economic forecast – Spring 2011*, ibid.

Figure 1.3: Real GDP per capita, by country
(index 2007 = 100)



Key figures in 2010:
Highest:
Poland: 110.7
Lowest:
Latvia: 79.7
EU-27 average:
97.0

NB: Provisional values 2007-2009 for EL, 2008-2009 for SI. Estimated values 2009 for BG and 2008-2009 for RO.

Source: Eurostat (online data code: tsdec100)

GDP per capita varies widely across the EU

In 2009, GDP per capita in the EU still varied widely between Member States. Among the countries with GDP per capita, in terms of purchasing power standards (PPS) ([6]), higher than the EU average are Luxembourg (by 171 % ([7])), Ireland (by 27 %), Netherlands (by 31 %), Austria (by 24 %), Denmark (by 21 %) and Sweden (by 18 %). The countries with the lowest are Bulgaria (lower than the EU average by 56 %, Romania (by 54 %), Latvia (by 48 %) and Lithuania (by 45 %) ([8]).

Indicator relevance

Real GDP per capita reflects the amount of goods and services produced by an economy. It is often a proxy for economic prosperity, which is needed to enlarge people's freedoms and provide them with resources to lead satisfying lives. Despite the recent economic crisis, it can be said that Europe is living in an age of unprecedented economic prosperity and material affluence. GDP per capita, however, does not reflect the equality of distribution of that prosperity, so is not representative of many social issues. Because the public sector is measured by inputs rather than outputs, GDP is also not a very helpful measure of public sector delivery. In addition, it does not directly include economic activities existing outside the markets (those not being bought or sold, such as growing food for own consumption), production that is difficult to express in monetary terms (such as child rearing) or processes which take place without human intervention, without clear ownership or otherwise outside the economy's institutional structure (such as natural growth occurring in an uncultivated forest). Because these all affect well-being, GDP per capita cannot be used as a holistic measure of the well-being of individuals.

([6]) The Purchasing Power Standard (PPS) is an artificial reference currency unit that eliminates price level differences between countries. One PPS buys the same volume of goods and services in all countries. This unit allows meaningful volume comparisons of economic indicators across countries. Aggregates expressed in PPS are derived by dividing aggregates in current prices and national currency by the respective Purchasing Power Parity (PPP). The level of uncertainty associated with the basic price and national accounts data, and the methods used for compiling PPPs imply that differences between countries that have indexes within a close range should be interpreted with care.
([7]) The high level of GDP per capita in Luxembourg is partly due to the large share of cross-border workers in total employment. While contributing to GDP, they are not taken into consideration as part of the resident population which is used to calculate GDP per capita.
([8]) See the Structural Indicator 'GDP per capita in PPS' (tsieb010) on the Eurostat website.

Definition

This indicator is a measure of economic activity, namely the value of an economy's total output of goods and services, less intermediate consumption, plus net taxes on products and imports, in a specified period. GDP can be broken down by output, expenditure or income components. The main expenditure aggregates that make up GDP are household final consumption, government final consumption, gross fixed capital formation, changes in inventories, and net exports, i.e. the difference between imports and exports of goods and services (including intra-EU trade).

Investment

Between 2000 and 2008 the share of investment in the GDP of the EU followed the economic cycle, resulting in a moderate increase, in particular since 2004, but in 2008 and in 2009 development declined

Commentary

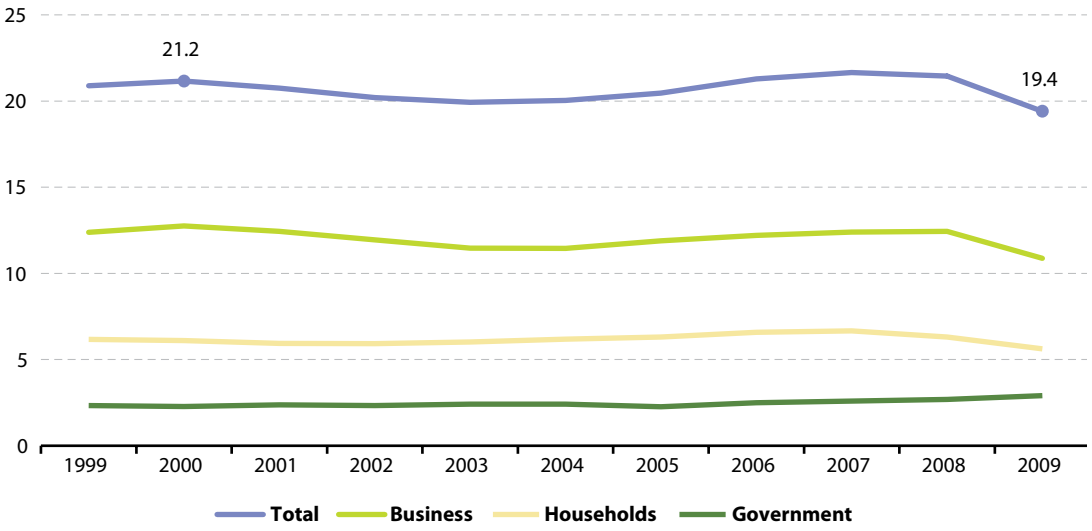
Business investment has been the main influence on total investment

Investment spending is typically a cyclical and volatile component of GDP growth. During the economic downturn of 2000 to 2003, total investment in GDP fell to a low of 19.9 %, mainly due to a decline in business investment. Since 2003 total investment spending rose steadily, above the growth rate of GDP, as a result of the strong economy fuelling business spending. This led to an investment rate of 21.7 % in 2007, which was higher than in the previous cyclical peak of 2000. Throughout this period the share of public investment in GDP remained relatively stable at around 2.4 %. It was mainly business investment that has influenced total investment.

In 2008–2009, the crisis' effects were visible on falling business and household investment spending

As a result of the economic crisis, spending (including inventories) fell during 2008 and 2009. In 2009, the level of 19.4 % was lower than the trough experienced during the previous cyclical low of 19.9 % in 2003. This was mainly a result of sharp cuts in business investment spending (from 12.4 % in 2008 to 10.9 % in 2009) ([9]), as well as a slight decrease in household investment spending (from 6.7 % in 2007 to 5.6 % in 2009). Government investment spending grew continuously from 2005 by about 6.5 % annually and this development has not been affected by the economic crisis. In fact, in 2008 and 2009 governments around the world reacted with massive economic stimulus packages to effect a turnaround in the world business cycle (in the EU the European Economic Recovery Plan provided an immediate stimulus package amounting to 1.5 % of EU GDP). Nevertheless, some countries with vital business sectors not severely affected by the economic crisis (in particular Austria, Belgium and Slovakia) managed to keep total investment spending above the EU average even with low levels of government investment.

Figure 1.4: Investment by institutional sectors, EU-27
(% of GDP)



Period evaluated: 2000-2009
Average annual growth rate: -1.0 %
Relative change: - 8.3 %
Absolute change: -1.8 %

Source: Eurostat (online data code: tsdec210)

([9]) Worldwide, business investment spending started recovering about mid-2010. However, a slower recovery is predicted for the EU than Japan and USA. See for example Eurostat news release, Euro-indicators 161/2010, *Business investment rate up to 20.4 % in the euro area and 19.9 % in the EU-27*, 28 October 2010 and OECD Factblog, *Business returns*, 19 November 2010.

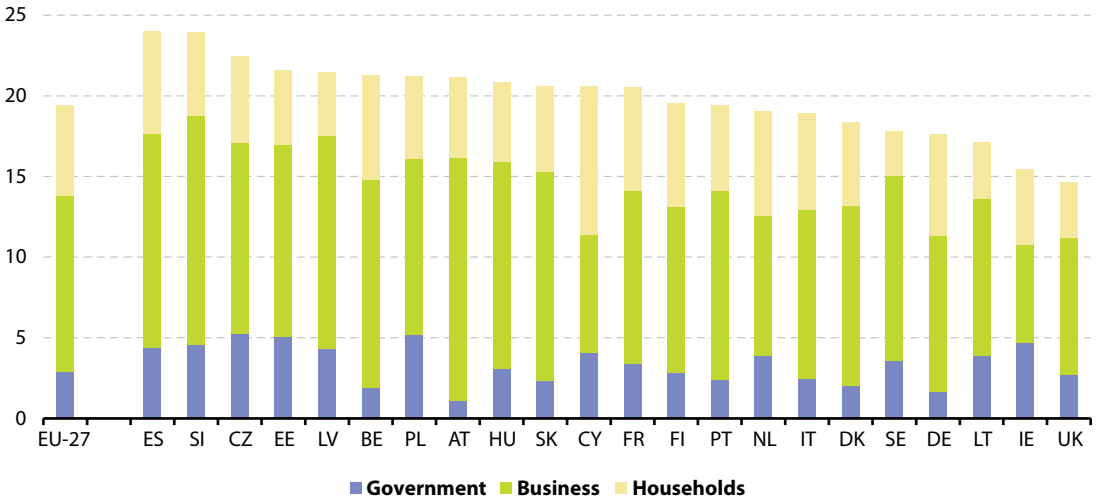
Figure 1.5: Investment by institutional sectors, by country, 2009
(% of GDP)

Key figures in 2009:

Highest:
Spain: 24 %

Lowest:
UK: 14.7 %

EU-27 average:
19.4 %



Source: Eurostat (online data code: tsdec210)

Indicator relevance

Acquisitions of capital goods determine to a large extent a society's future economic performance by deepening and widening the capital stock, be it in the form of physical capital or knowledge. Therefore, together with labour supply, it impacts on potential growth rates. Acquisition of capital goods can of course have a variety of economic, environmental and social effects both positive and negative, for example, investment in more environmentally friendly technologies is crucial to improve eco-efficiency.

Definition

The indicator gives the share of GDP that is used for gross investment (rather than being used, for example, for 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

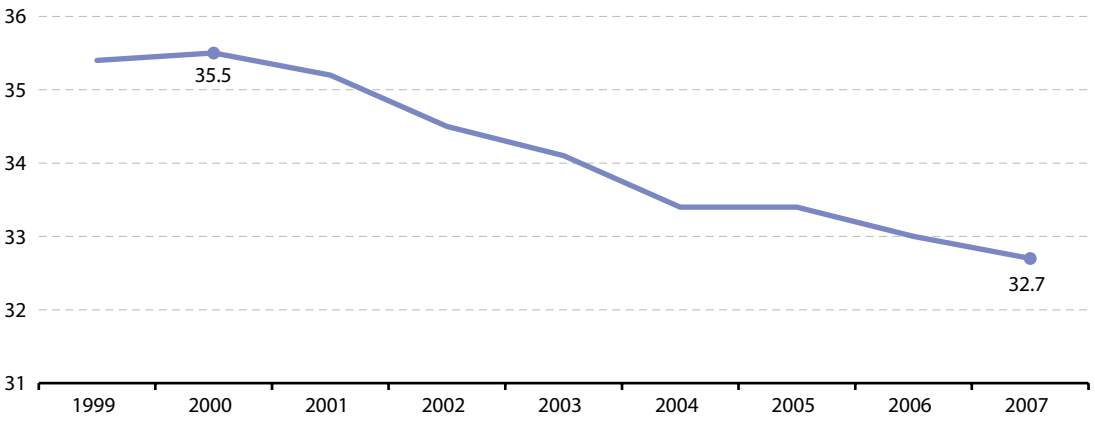
Between 2000 and 2007 disparities in GDP per capita between the regions of the EU decreased, indicating that economic wealth is becoming more equally distributed

Commentary

Disparities in GDP between regions have fallen

Within-country dispersion rates of regional GDP in the EU, which is a measure of the equality of distribution of economic activity among a country's regions, fell between 2000 and 2007 from 35.5 % to 32.7 % ([10]).

Figure 1.6: Dispersion of regional GDP per capita, EU-27
(% of national GDP per inhabitant)



Period evaluated: 2000-2007
Average annual growth rate: -1.2 %
Relative change: - 7.9 %
Absolute change: -2.8 %

Source: Eurostat (online data code: tsdec220)

Dispersion of regional GDP is highest in eastern European countries

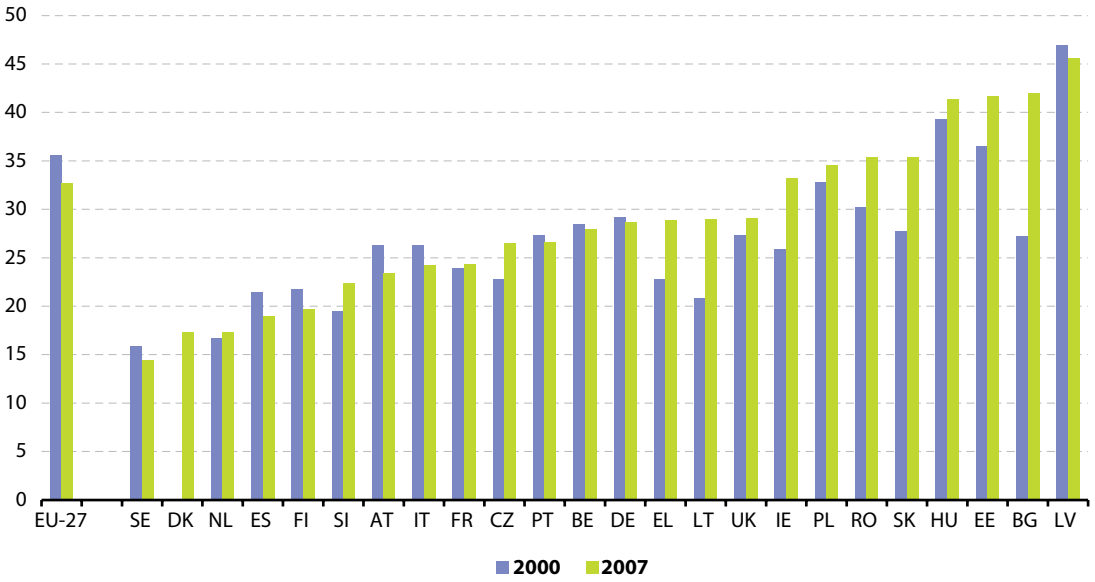
In 2007, most countries with disparities higher than the EU average were eastern European. The rapid transition into market economies has apparently led to a polarisation of economic output and an uneven distribution of wealth between regions. Between 2000 and 2007, the within-country dispersion rate of regional GDP rose in 15 out of 24 Member States. Despite growing regional disparities in many countries, the decrease at EU level is likely to be due to declines in Member States with large populations (Spain, Italy and Germany).

Although the indicator presented here refers to NUTS level 3; the trends between 2000 and 2007 are consistent for both NUTS levels 2 and 3.

([10]) Regional disparities of GDP will probably have been negatively affected by the economic crisis of 2008 and 2009.

Figure 1.7: Dispersion of regional GDP per capita, by country
(% of national GDP per inhabitant)

Key figures in 2007:
Highest:
Latvia with 45.6 %
Lowest:
Sweden with 14.4 %
EU-27 average:
32.7 %



NB: Countries with only one (CY, LU) or two regions (MT) at NUTS level 3 are not shown.

Source: Eurostat (online data code: tsdec220)

Indicator relevance

Although GDP should not be considered as a proxy for well-being, regional GDP is useful in providing information about numerous issues related to well-being. High dispersion rates of regional GDP not only indicate a high inequality in how populations of individual regions enjoy economic and social resources, but also that economically disadvantaged regions are more vulnerable to economic shocks. 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'.

Definition

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 capita, weighted with the share of population and expressed as a percentage of the national GDP per capita. 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 capita in all of a country's regions is identical, and it rises if there is an increase in the distance between a region's GDP per capita and the country mean.

Household saving

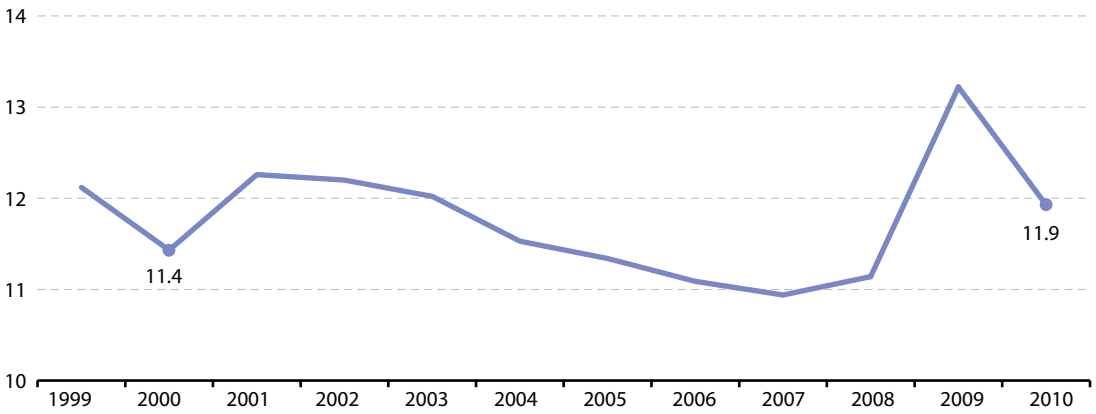
Between 2000 and 2010 the share of saving in the disposable income of EU households increased slightly. Although the rate fell between 2001 and 2007, it improved sharply during the economic crisis in 2008 and 2009 and in 2010 fell close to 2003 level

Commentary

Economic crisis has manifested in a sharp increase in household saving rate

In response to the economic downturn over the years 2001 to 2003, the household saving rate climbed to 12.3 % in 2001 and then fell modestly during the economic upturn until 2007, when it reached a low of 10.9 %. It started to rise again in 2008 and rose sharply during the crisis year of 2009 to 13.2 %. Such sharp increases reflect a lack of confidence by households in the immediate future of the economy and an attempt to protect their long-term assets in view of low interest rates. This was especially the case during the economic crisis when the real disposable income of households decreased ([11]). The fall of the household saving rate in 2010 fits the expectation that it will not continue to rise further and will most probably gradually return to pre-crisis levels ([12]).

Figure 1.8: Household saving rate, EU-27
(% of real disposable household income)



Period evaluated: 2000-2010
Average annual growth rate: +0.4 %
Relative change: +4.4 %
Absolute change: +0.5 %

NB: The EU-27 aggregate is based on data from 22 EU Member States (no data available for BG, EL, LU, MT or RO).

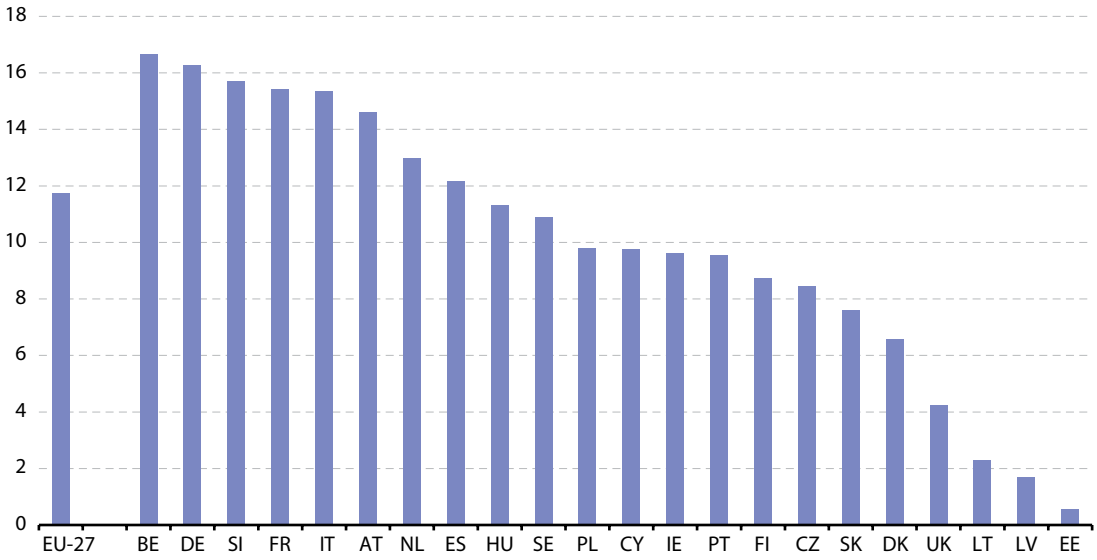
Source: Eurostat (online data code: tsdec240)

Between 2000 and 2009, the household saving rate varied significantly across EU Member States. As can be seen in Figure 1.9, particularly in Baltic countries and the UK, the average household saving rate was very low (less than half the EU average). Numerous factors can help explain country differences in household saving rate, such as income taxes, inflation, the pension system, stock and housing prices, real interest rate, female employment rate or the volume of shadow activities. In 2009, the saving rate across EU Member States ranged from around 6 % (6 % in UK, 7.9 % in Lithuania) to above 18 % (18.1 % in Spain, 18.3 % in Belgium).

([11]) Household real disposable income started to fall in some countries already in the first quarter of 2008 and has continued to fall until 2010. The reason was that nominal incomes of households fell slightly, mostly due to rising unemployment, and the prices of goods and services they consume grew. See also Eurostat news release, Euro-indicators 111/2010, *Household saving rate down to 14.6% in the euro area and 13.0% in the EU-27*, 29 July 2010 and Eurostat news release, Euro-indicators 14/2011, *Household saving rate down to 13.8% in the euro area and 11.5% in the EU-27*, 28 January 2011.
([12]) Commission staff working document, *European economic forecast – autumn 2009, European Economy 10/2009*.

Figure 1.9: Household saving rate, by country, 2000-2009 average
(% of real disposable household income)

Key figures for 2000-2009:
Highest: Belgium: 16.7 %
Lowest: Estonia: 0.6 %
EU-27 average: 11.7 %



NB: Average 2002-2009 for IE and 2000-2010 for EU-27, PT, FI and SE.

Source: Eurostat (online data code: tsdec240)

Indicator relevance

Household savings measures the part of income that may be used for investment. It represents the financial resources that can be allocated to improving the productive, natural and human capital for future generations. However, non-marketed environmental and social capital is not reflected in the saving rate, so to assess sustainability trends this indicator would ideally be analysed in conjunction with non-monetised indicators that reflect the accumulation or depletion of natural resources and human capital. Household saving constitutes the largest part of total saving in the economy. In periods of slow economic growth or crisis, it reduces demand and can deepen the economic downturn and slow recovery.

Definition

The gross household saving rate measures the portion of disposable income not spent by households. It is measured by dividing gross saving by nominal gross disposable income adjusted for the change in the net equity in pension fund reserves.
The real gross disposable income of households is defined as the nominal gross disposable income of households divided by the deflator (price index) of household final consumption expenditure.

Labour productivity

Between 2000 and 2010 labour productivity in the EU improved, although the economic crisis in 2008 and 2009 reversed this trend, the levels of 2007 were reached in 2010

Commentary

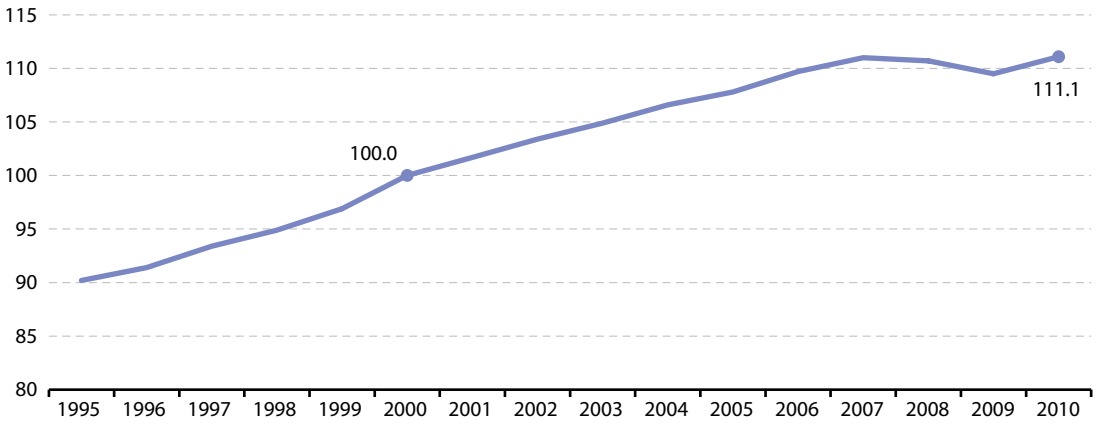
Labour productivity in the EU rose steadily between 2000 and 2007. In 2007, it began to fall in Denmark, France and Sweden, even if it continued to grow in Bulgaria, Estonia, Ireland, Spain, Cyprus, Slovakia, Portugal and Poland. Falls in productivity during the economic crisis were mostly the result of firms not laying off workers as much as expected (as a result of labour hoarding and strengthened short-term employment protection legislation in many Member States reducing labour market flexibility and resulting in work-sharing and reducing working hours per worker instead of layoffs) but also slower capital accumulation ([13]). However, the economic upturn of 2003 to 2007 has not led to above-average increases in labour productivity growth. This can be explained by factors such as declining investment per employee, slowdown in the rate of technological progress, sluggish reorientation of the economy toward sectors with high productivity, the relatively small size of the EU's information and communication technology industry ([14]) and a stagnating share of R&D expenditure in GDP (see indicator on 'R&D expenditure').

After several years of growth, labour productivity in the EU fell in 2008 and 2009, the levels of 2007 were reached in 2010

Eastern European countries experienced high labour productivity gains in 2000-2010

Between 2000 and 2010, labour productivity grew sharply in Member States that were in the process of economic transition and with high GDP growth rates: Romania (74.7 %), Latvia (65.2 %), Slovakia (55.8 %), Estonia (60.1 %), Lithuania (56.6 %), Poland (35.0 %) and Hungary (32.6 %).

Figure 1.10: Real labour productivity, per hour worked, EU-27
(index 2000 = 100)



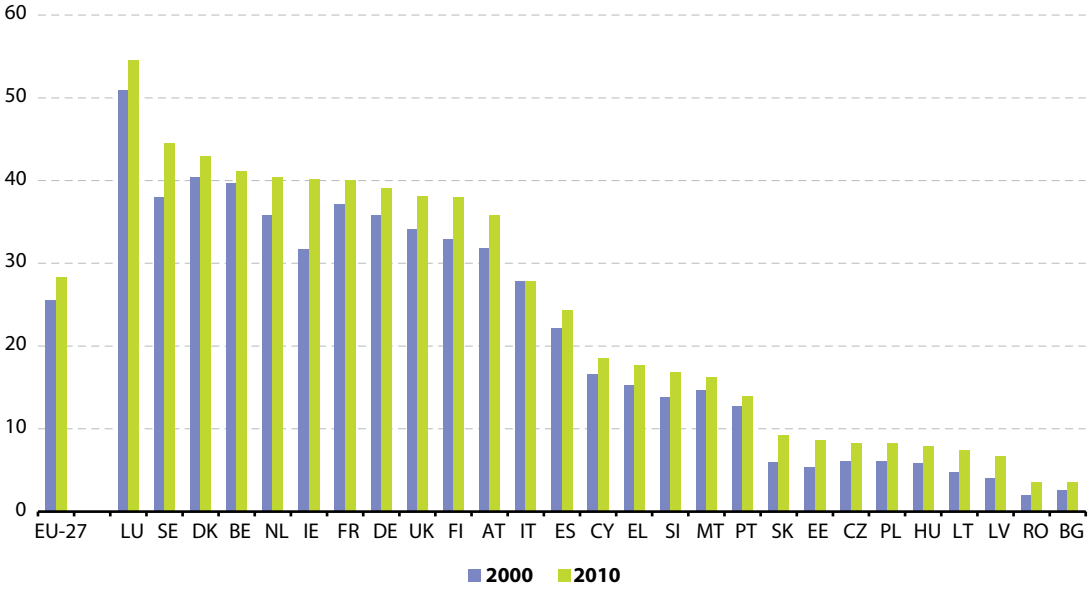
Period evaluated: 2000-2010
Average annual growth rate: +1.1 %
Relative change: +11.1 %

Source: Eurostat (online data code: tsdec310)

([13]) *European economic forecast – autumn 2010*, ibid.
([14]) 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.

Figure 1.11: Real labour productivity per hour worked, by country
(EUR per hour worked)

Key figures in 2010:
Highest: Luxembourg: 54.6 EUR/h
Lowest: Bulgaria: 3.6 EUR/h
EU-27 average: 28.4 EUR/h



NB: 2002 data for LU (instead of 2000), 2009 data for BE, CZ, ES, FR, LU, MT, SI and UK (instead of 2010)

Source: Eurostat (online data code: nama_aux_lp)

Indicator relevance

Labour productivity per hour worked is one indicator of the EU economy's competitiveness and ability to ensure prosperity for its people over time. Among the factors leading to labour productivity growth are technological innovation and improvement in workers' skills and organisation of work. (Currently, however, there is a lack of output-oriented measures of the growing public sector's labour productivity.) If GDP grows and the number of hours worked remains stable, this indicator will also grow, indicating an annual increase in the output produced by one hour of labour. Increasing labour productivity is seen by the Europe 2020 strategy as a crucial path to ensuring Europe's competitiveness.

Definition

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). It provides a better picture of productivity developments in the economy than labour productivity per person employed, because it eliminates differences in the full time/part time composition of the workforce across countries and years.

Research and development expenditure

During the period 2002 to 2009 spending on research and development in the EU grew slightly as a share of GDP, but not fast enough to be on track towards the target of 3 % by 2010

Commentary

The share of research and development spending (R&D spending) as a percentage of GDP remained between 1.8 % and 1.9 % over the period 2000 to 2007, making no significant progress towards the EU SDS target of raising investments in R&D to 3 % by 2010. Over 2008 and 2009, R&D spending slightly grew to 2.0 %. This value remains below the OECD average of 2.3 %, as well as below the shares of USA (2.8 %) and Japan (3.4 %) (2008 data) ([15]).

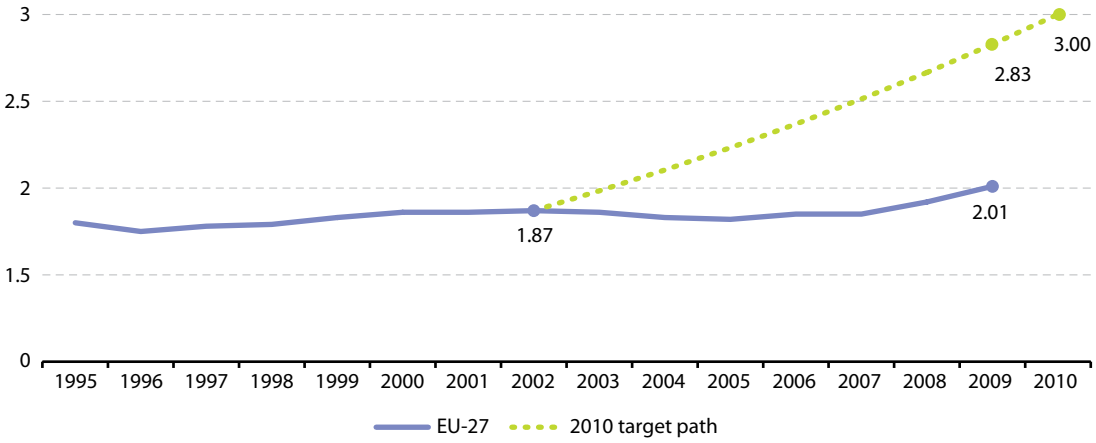
Despite the crisis and long-term inertia R&D spending improved in 2008 and 2009

In 2009, Finland and Sweden continued to lead with a share of 4.0 % and 3.6 % respectively, which also puts them in a world-leading position after Israel (4.3 % in 2009) ([16]). Austria, Denmark and Germany all stood between 2.8 % and 3.0 %. In addition, many of the countries that lag behind increased R&D spending significantly between 2000 and 2009, including Cyprus, Estonia and Portugal. All of these had almost doubled the percentage of GDP spent on R&D. However, some countries cut spending; the most marked was Slovakia which reduced its R&D budget from 0.7 % to 0.5 % over this period.

R&D is crucial for long-term growth based on knowledge and innovation

It would also seem that, as a way out of the economic crisis, some countries have attempted to support economic recovery and longer-term growth by boosting public and private funding of R&D. Germany, Denmark, Finland, Hungary, Ireland, Italy, Portugal and Slovenia increased their R&D spending in 2007 or 2008 contributing to the slight growth of the EU average towards the end of the 2000–2009 period. In some cases these increases were quite substantial, e.g. between 2007 and 2009 the spending on R&D grew by 37.2 % in Ireland and by 42 % in Portugal. However, due to pressure on public and private financial resources, the economic crisis has also resulted in cuts in R&D funding, especially in Latvia and, to a smaller extent, Romania, where R&D expenditures were already rather low.

Figure 1.12: Total R&D expenditure, EU-27
(% of GDP)



Period evaluated: 2002-2009
Average annual growth rate: +1.0 %
Required annual growth rate: +6.1 %
Distance to target path in 2009: -0.82 percentage points

NB: Eurostat estimates.

Source: Eurostat (online data code: tsdec320)

([15]) Organisation for Economic Co-operation and development, *Main science and technology indicators*, vol. 2010/1, Paris, 2010.
([16]) *Main science and technology indicators*, Volume 2010/2, ibid.

Indicator relevance

R&D expenditure contributes to the knowledge society and lays the foundations for future innovation. Science and technology can help predict and address unsustainable trends and major societal problems. New applications, technologies and organisational techniques are necessary to change behaviour and shift to a sustainable society. (R&D expenditure is, however, only a crude proxy for measuring innovation as it measures inputs, not outputs of innovation processes.)

The EU Sustainable Development Strategy identifies R&D as one of the two 'cross-cutting policies contributing to the knowledge society' and mentions several roles for R&D, such as to promote inter- and transdisciplinary approaches involving social and natural sciences, to bridge the gap between science, policy-making and implementation, to contribute to better health, or to contribute to smart growth through eco-friendly technological innovation. A significant share of the research projects and partnerships funded by the Seventh Framework Programme for Research and Technological Development is related to sustainable development. The European Economic Recovery Package also reiterates the need to boost R&D investment. Three major public private partnerships are foreseen for 2010 to 2013: a 'European green cars' initiative, a 'European energy-efficient buildings' initiative and a 'factories of the future' initiative. The Europe 2020 Strategy, with its 'Innovation Union', aims to improve framework conditions and access to finance for research and innovation to help turn ideas into products and services that create growth and jobs. To this end, the aim of raising combined public and private investment levels in the R&D sector to 3 % of GDP has been formulated as one of the five headline targets of the Europe 2020 Strategy.

Definition

The indicator is defined as gross domestic expenditure on research and experimental development (GERD) as a percent 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 fell significantly between 2000 and 2009. Due to overall GDP growth and a drop in energy consumption over the same period an absolute decoupling has been achieved

Commentary

Absolute decoupling of energy consumption from economic growth has been achieved between 2000 and 2009.

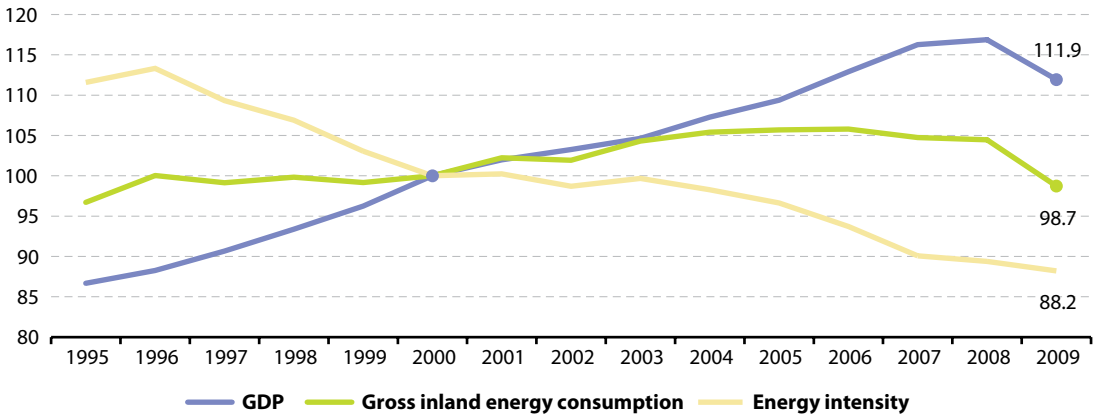
Energy intensity is strongly linked to the economic cycle. Thus energy intensity decreased from 1996 to 2000, remained almost constant from 2000 to 2003 and fell again from 2003 to 2009. This is a result of GDP growth slowing faster than gross inland energy consumption during economic downturns. The overall decline in energy intensity by almost 12 % has been enough to meet the 1 % average yearly reduction target ([17]) despite only minor improvement during the downturns.

Over the period 2003 – 2009 the annual average growth rate for gross inland energy consumption fell by 0.9 %

Viewed in more detail, between 1995 and 2000 energy intensity fell by 2.1 % per year on average (GDP grew by 2.9 % per year while gross inland energy consumption increased by 0.7 % per year on average). Between 2000 and 2009 energy intensity continued to fall, by 1.4 % per year on average (GDP rose by 1.3 % per year and gross inland energy consumption decreased by 0.1 % per year on average).

The least energy-intensive economies in the EU are Denmark, Ireland and the UK. Among the most energy-intensive economies are Bulgaria, Romania, Estonia, the Czech Republic and Slovakia. In socialist times, eastern European Member States had economies with high shares of energy-intensive industries as well as an energy-inefficient infrastructure serving these industries. They have been undergoing the transition to economies based more on services or higher value-added production as well as the process of industrial modernisation.

Figure 1.13: Energy intensity of the economy, EU-27
(index 2000 = 100)



Period evaluated: 2000-2009
Average annual growth rates
Energy intensity: -1.4 %
Gross inland energy consumption: -0.1 %
GDP: +1.3 %

Source: Eurostat (online data codes: tsdec360, tsdcc320, nama_gdp_k)

([17]) Commission communication, *Energy efficiency in the European Community – Towards a strategy for the rational use of energy*, COM(1998) 246.

Indicator relevance

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 identify whether there is a decoupling between energy consumption and economic growth. Relative decoupling occurs when energy consumption grows at a slower pace than economic growth. Absolute decoupling occurs when energy consumption falls despite economic growth. Energy intensity decreases in both cases (for a more detailed explanation of decoupling see Box 0.5 in the introduction chapter). To provide a fuller picture of the efficiency of an economy's energy consumption, energy intensity should be considered alongside other indicators such as CO_2 emissions or the share of renewables in domestic energy production. Although no quantified objective has been set in the EU Sustainable Development Strategy for energy intensity, in 1998 the European Commission proposed an indicative Community-wide target of an additional 1 % annual reduction in energy intensity by the year 2010 ([18]). Furthermore, the Europe 2020 Strategy aims to improve energy efficiency by 20 % and meet a binding target for renewable energies to make up a 20 % share of overall EU energy consumption by 2020.

Definition

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.

([18]) COM(1998) 246, ibid.

Employment

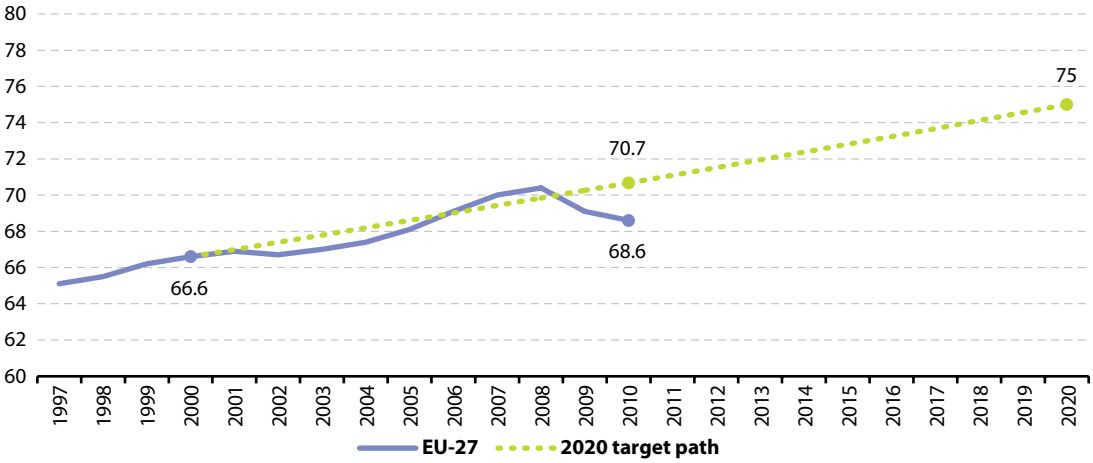
Following an increase in employment rates between 2000 and 2008 they fell in 2009 and 2010, making it harder to reach the target level of 75 % by 2020

Commentary

Until 2008 employment in the EU was well on track towards the 2020 target

Between 2000 and 2008, employment among 20 to 64 year olds in the EU rose from 66.6 % to 70.4 % and was on track to meet the 75 % target for 2020. Its development reflected the economic cycle, albeit with some time lag, and prior to the crisis the employment rates were even above the target path. The economic crisis had a pronounced effect when in 2009 the employment rate fell to 69.1 % – below the 2006 level. The employment rate has continued to fall since then, reaching 68.6 % in 2010. Some Member States reacted by reducing working hours and creating public sector jobs ([19]).

Figure 1.14: Total employment rate, EU-27
(% of age group 20-64 years)



Period evaluated: 2000-2010
Average annual growth rate: +0.3 %
Required annual growth rate: +0.6 %
Distance to target path in 2010: -2.1 percentage points

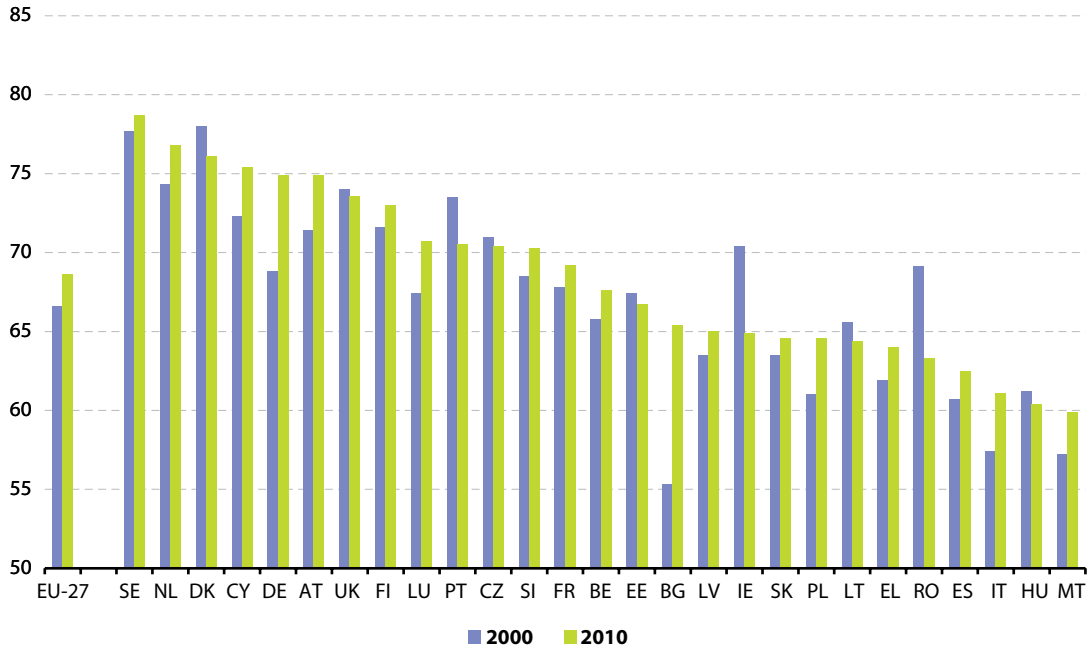
Source: Eurostat (online data code: tsdec410)

Differences between EU Member States are large. The Netherlands, Sweden, Denmark, Cyprus, Germany and Austria are all close to or even above the 75 % target, while Malta, Hungary, Italy, Romania, Spain, Greece, Lithuania, Poland, Slovakia and Ireland are all below 65 %.

([19]) International Labour Office, *EU: heterogeneous shocks and responses across countries (G20 Statistical Update)*, prepared for the G20 Meeting of Labour and Employment Ministers, 20–21 April 2010, Washington DC.

Figure 1.15: Total employment rate, by country
(% of age group 20-64 years)

Key figures in 2010:
Highest: Sweden: 78.7 %
Lowest: Malta: 59.9 %
EU-27 average: 68.6 %



Source: Eurostat (online data code: tsdec410)

The economic crisis was hardest on men and the less educated

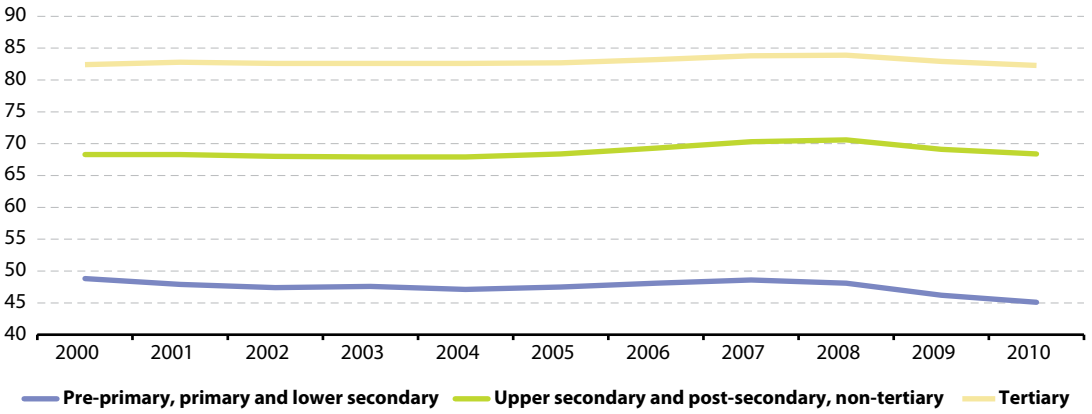
Men were harder hit than women, experiencing a fall in employment of 2.2 % in 2009 compared with a fall of 0.8 % for women (see following indicator). In 2010 the employment rate continued to fall by 0.7% for men and 0.4 % for women. Young people aged between 15 and 24 were particularly vulnerable as well as immigrants ([20]). However, the employment rate of older people between 55 and 64 years was not affected and continued to grow, standing at 45.6 % in 2008, 46.0 % in 2009 and 46.3 % in 2010, as compared with 36.8 % in 2000 ([21]).

Higher education gives better chances on the job market

The employment rate is greater for those with higher education levels. Since 2000, more than four-fifths of 25 to 64 year olds with a tertiary-level educational qualification have been employed compared with less than half of those with lower secondary education. The relative employment rates for the different education subgroups have evolved in parallel over time. People with lower education levels were the most vulnerable to job losses, which may be explained by loss of jobs in sectors largely requiring lower qualification, e.g. the construction sectors of Spain, UK and Ireland. In 2009, the employment of people with completed primary and lower secondary education fell by 4.0 %, for those with upper and post-secondary education it fell by 2.1 %, and for those with tertiary education it fell by 1.2 %. The decreases in employment rate continued in 2010.

([20]) OECD Factblog, *Immigrants take the brunt of the jobs crisis*, 20 July 2010.
([21]) See the headline indicator 'employment rate of older workers' in the chapter on 'demographic changes'.

Figure 1.16: Employment rate, by highest level of education attained, EU-27
(% of age group 25-64 years)



Change over period 2000-2010:

Average annual growth rates

Pre-primary, primary and lower secondary:
-0.8 %

Upper secondary and post-secondary, non-tertiary:
+0.01 %

Tertiary:
-0.01 %

Source: Eurostat (online data code: tsdec430)

Indicator relevance

Employment contributes to economic performance, quality of life and social inclusion, making it one of the cornerstones of socioeconomic development. Labour market participation widens people's range of freedoms and resources in striving to achieve life goals and aspirations. The Europe 2020 Strategy sets the target for 75 % of the population aged 20 to 64 to be employed by 2020.

Definition

The employment rate is defined as the share of persons aged 20 to 64 years in employment. The employment rate by highest level of education attained is defined as the share of employed people within age group 25 to 64 years who have attained a specific level of education in the total population of the same age group.

Female employment

Between 2000 and 2008 female employment in the EU rose steadily, but from 2009 it started to fall. The gap between male and female employment continued to shrink even during the economic crisis, which hit men more than women

Commentary

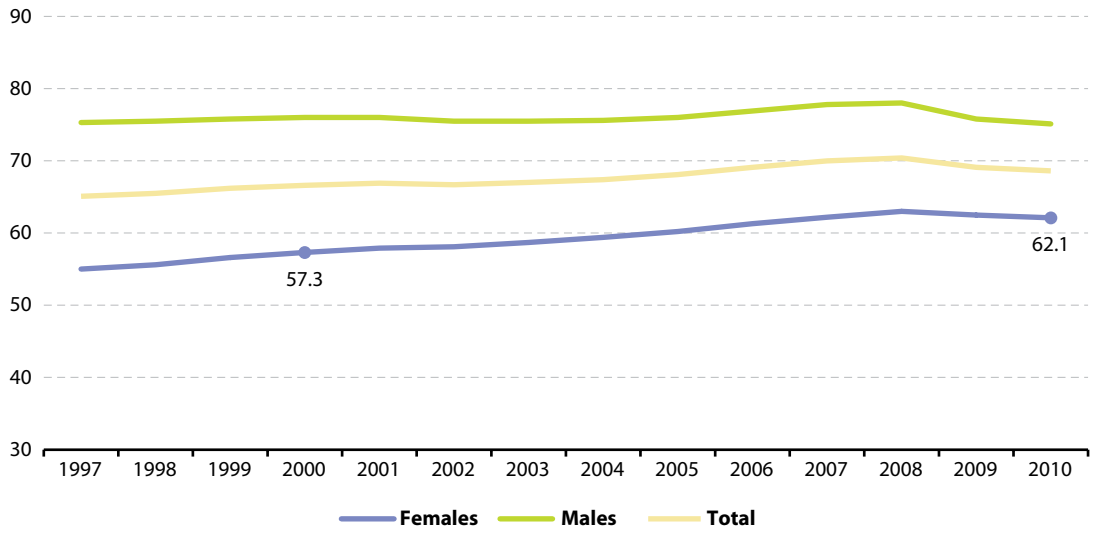
Female employment is gradually converging with that of men

Over the period 2000 to 2008, female employment rose continuously, closing the distance to male employment. This convergence was less strong during the economic upturn from 2005 to 2007 when more jobs were created, than when economic conditions were weaker from 2000 to 2003 and since 2008. In 2008 the female employment rate (of women aged 20 to 64) was 63 %, but declined slightly in 2009 to 62.5 % and in 2010 reached 62.1 %. The crisis affected men more than women, helping to further narrow the employment gender gap.

Considerable differences remain between Member States. In 2010 female employment ranged from 41.4 % in Malta, 49.5 in Italy and 51.7 % in Greece to 70.8 % in the Netherlands 71.5 % in Finland, 75.7 % in Sweden and 76.9 % in Norway.

Figure 1.17: Employment rate, by gender, EU-27
(% of age group 20-64 years)

Period evaluated: 2000-2010
Average annual growth rates
Females: +0.8 %
Males: -0.1 %
Total: +0.3 %



Source: Eurostat (online data code: tsdec420)

Indicator relevance

Gender equality is one of the key principles of sustainable development, linked to the principles of solidarity, the rule of law and respect for fundamental rights, including freedom and equal opportunities. Providing women with equal access to the labour market and quality jobs widens their range of resources to achieve their life goals. It also allows the possibility for both women and men to strike a balance between their professional careers and their family lives.

Definition

The female employment rate is defined as the share of employed women aged 20-64 years in the total female population of the same age group.

Regional disparities in employment

Between 2000 and 2009 disparities in employment rates between regions were reduced, although showing a slight upturn in 2008 and 2009

Commentary

Reduction of regional disparities coupled with economic upturn

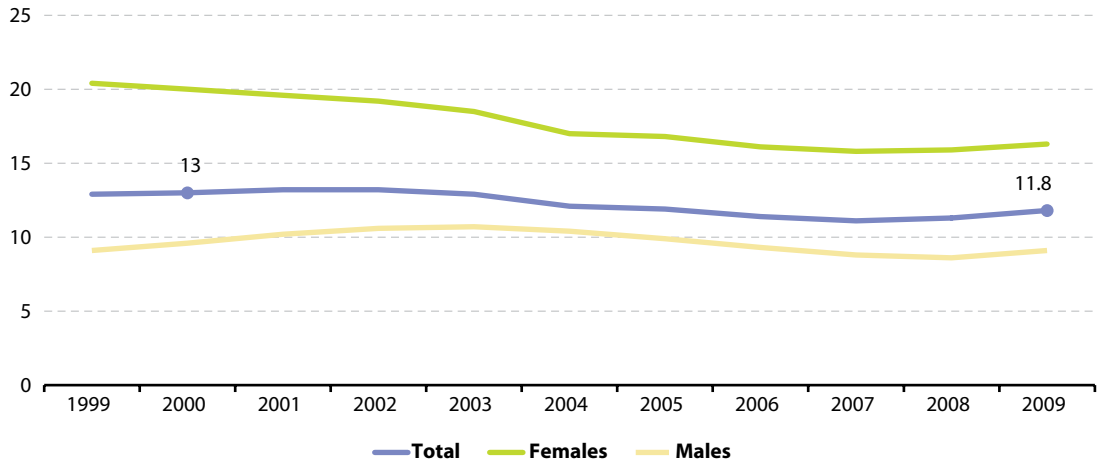
The dispersion of regional employment grew slowly between 1999 and 2003, before falling steadily from 2003 to 2007 due to favourable economic conditions. In 2007 the indicator stood at 11.1 %, which is a significant decrease from the 13.0 % in 2000. Between 2000 and 2007, disparities were reduced in 12 of the 18 EU Member States for which the indicator was calculated. This may have been caused by factors such as a more mobile workforce, diminishing sectoral specialisation of regions, and diminishing regional differences in educational attainment and skills. However, over 2008 and 2009 disparities increased to 11.8 %. In 2009, 18 of 19 Member States reported dispersion of regional employment rates within their territories that were below the dispersion within the EU as a whole (Italy being the exception).

Women finding a stable position in regional economies

Dispersion of male employment (from 9.6 % in 2000 to 9.1 % in 2009) was not as marked as that of female employment (from 20 % in 2000 down to 16.3 % in 2009). However, the gradual fall of the dispersion of female employment indicates that the position of women is becoming more stable in regional economies.

Disparities are higher at NUTS 3 level than at NUTS 2 level, as at NUTS 3 level the differences between 'sub-regions' (which sometimes have large variability) within each NUTS 2 level are taken into account.

Figure 1.18: Dispersion of regional employment rates, by gender, EU-27
(coefficient of variation of employment rates (of the age group 15-64) across regions (NUTS 2 level) within countries)



Period evaluated: 2000-2009
Average annual growth rates
Total: -1.1 %
Females: -2.3 %
Males: -0.6 %

Source: Eurostat (online data code: tsdec440)

Indicator relevance

Economic and social disparities among regions weaken the EU's dynamism. Paid employment is important for ensuring decent standards of living and achieving personal hopes, goals and aspirations, making it an important component of well-being. 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 regional employment disparities ([22]).

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. It rises if the differences between employment rates among regions increase.

([22]) Brussels European Council, Presidency conclusions, 20 and 21 March 2003, 8410/03, p. 19.

Unemployment

Due to a sharp increase caused by the current economic crisis, unemployment in the EU in 2010 was higher than in 2000. Gender disparities decreased towards 2010, but unemployment of young people remains a problem

Commentary

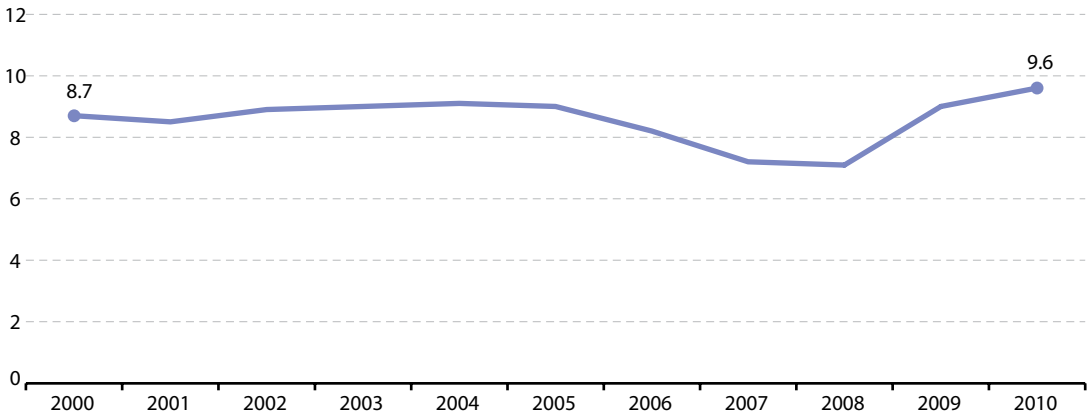
Unemployment follows economic cycles with a time lag

Unemployment increased in the EU between 2001 and 2003 from 8.5 % to 9.0 %, lagging one year behind the economic downturn. It fell between 2005 and 2008 to 7.1 %, a level well below the previous economic cycle's low point. However, in 2008, the unemployment rate rose in ten Member States and over 2009, despite job-stabilisation measures and the European Economic Recovery Plan it rose significantly across the whole EU. The most affected, in percentage terms, by the increase in 2009 were Latvia, Estonia and Lithuania, where unemployment leaped by 8 to 10 percentage points, but also Spain and Ireland, which experienced a rise in unemployment by 4 to 7 percentage points. In 2010, the unemployment rate fell in Malta and Luxembourg, although in most countries it continued to grow slightly, reaching 9.6 % in 2010, the highest value for the EU since 2000. Further increases in structural unemployment can be expected as some sectors affected by the crisis might potentially be downsized or relocated ([23]).

Spain and some eastern European Member States are among the countries hit the most

The unemployment rate varies widely between countries. In 2010 countries with the highest unemployment rates were Spain 20.1 %,, Latvia 18.7 %, Lithuania 17.8 %, Estonia 16.9 %, and Slovakia 14.4 %. Among the countries with the lowest unemployment were Norway, the Netherlands, Luxembourg and Austria, which all had rates between 3.5 % and 4.5%.

Figure 1.19: Total unemployment rate, EU-27
(%)



Period evaluated: 2000-2010
Average annual growth rate: +1.0 %

Source: Eurostat (online data code: tsdec450)

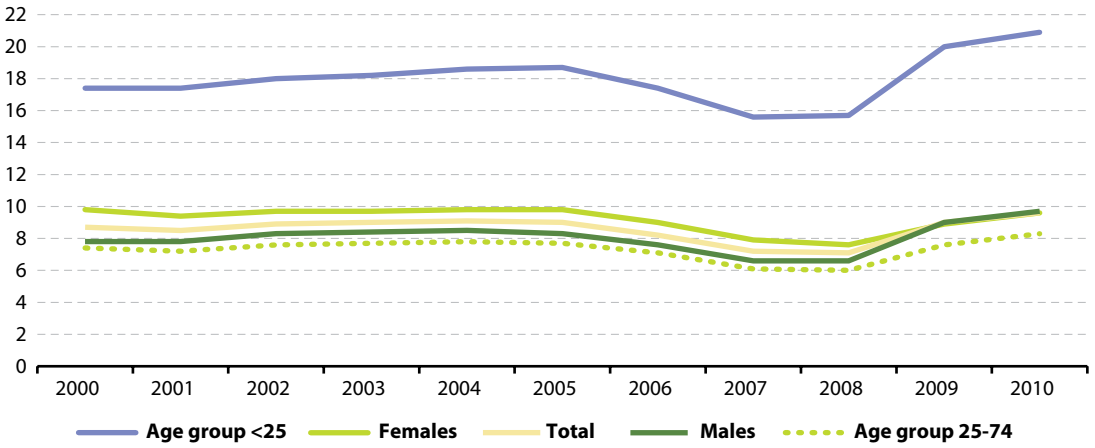
Young people, men, low-skilled workers and immigrants hit most by the economic crisis

Unemployment by age and gender show the labour market situation is worst for young people aged 15 to 24. More than 20 % of people in that group were unemployed throughout the second half of 2009 and 2010. This is more than twice as high as the overall rate. The gender gap in unemployment fell dramatically from 2.0 % in 2000 to 0.1 % in 2010.

([23]) *European economic forecast – autumn 2009*, ibid.

Figure 1.20: Unemployment rate, by gender and age group, EU-27
(%)

Change over period 2000-2010
Average annual growth rates
Young people below 25: +1.8 %
People aged 25–74: +1.2 %
Males: +2.2 %
Females: -0.2 %



Source: Eurostat (online data codes: tsdec450, tsdec460)

Indicator relevance

Unemployment increases the risks of poverty and social exclusion as well as depriving individuals, households and communities of resources for ensuring long-term well-being. EU policies and objectives aim to promote full employment and to increase employment rates among vulnerable groups. In particular, there are goals 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 to provide both protection from poverty and incentives to search for work.

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 (available for paid employment or self-employment before the end of the two weeks following the reference week); (c) actively seeking work (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 (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

Real GDP per capita

Real GDP per capita is calculated as the ratio of real GDP to the average population of a specific year. GDP includes goods and services that have markets (or which could have markets) and products which are produced by general government and non-profit institutions. GDP is one of the indicators compiled in the annual national accounts in accordance with the European System of Accounts - ESA 1995 ([24]).

Price, value and volume are related by the equation:

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

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; this is called a chain-linked series. The purpose of the valuation at constant prices is to assess the dynamics of economic development irrespective of price movements. 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. Unlike the choice for a fixed base year, the choice of reference year in chain-linking does not have any effect on growth rates.

The data are published in ECU/euro, in national currencies (including euro converted from former national currencies using the irrevocably fixed rate for all years) and in Purchasing Power Standards (PPS) at current prices and in volume terms. Population is measured in persons, 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.

Figures are collected from the national accounts departments of Member States' national statistical institutes. Eurostat estimates the figures for EU and euro area; all the other data are produced by the statistical offices of the respective countries. The annual data for the euro area and the EU are derived using Member States' data as input, usually by adding up the aggregates for all Member States after expressing them in a common currency (euro/ECU). Where single Member States' figures are lacking, Eurostat may use unpublished estimates to impute country data and hence calculate the European aggregates. Countries use many sources to compile their national accounts, among them administrative data from government, censuses, business surveys and household surveys. In particular, different sources are used for calculating the different approaches of GDP (i.e. the output approach, the expenditure approach and the income approach). If more than one of these approaches is used, their results are usually balanced, i.e. forced to be coherent, so that a single value for GDP is obtained.

Any GDP-derived measures for the European Union, including real GDP per capita, are calculated directly from the European aggregates rather than from adequately weighing the derived measures for the Member States.

Real GDP per capita is based on rounded figures. Discrepancies in tables between totals and percentages are due to rounding.

For more details, see: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/nama_esms.htm

([24]) Regulation (EC) No 2223/96 on the European system of national and regional accounts in the Community.

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 NUTS 3 level is defined as the sum of the absolute differences between regional and national GDP per capita, weighted with the regional share of population and expressed in percent of the national GDP per capita.

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.

For more details see the notes on real GDP per capita above.

The indicator is based on the Nomenclature of Territorial Units for Statistics (NUTS) as last modified in February 2007. NUTS 2006 provides a uniform, consistent breakdown of territorial units for the production of regional statistics for the EU. Level 3 of the nomenclature has 1303 regions: Belgium (44), Bulgaria (28), the Czech Republic (14), Denmark (11), Germany (429), Estonia (5), Ireland (8), Greece (51), Spain (59), France (100), Italy (107), Latvia (6) , Lithuania(10), Hungary (20), Malta (2), the Netherlands (40), Austria (35), Poland (66), Portugal (30), Romania (42), Slovenia (12), Slovakia (8), Finland (20), Sweden (21) and the United Kingdom (133). Cyprus and Luxembourg are both considered as single regions at NUTS 3 level. For a list of the European statistical regions see http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

Household saving

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 nonfinancial services for exclusively own final use.

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.

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

Labour productivity per hour worked is calculated as the ratio between GDP expressed in purchasing power standards and the hours actually worked in the economy. 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. I.e. a clear distinction must be made between the 'domestic employment' (all persons employed in the domestic, irrespective of their residence) and the 'national employment' concept (all persons employed who are resident in the country). For most countries this distinction is actually relatively small, though it shows most clearly in the case of Luxembourg (where domestic employment is over 40% higher than national employment). Since the domestic employment concept is more appropriate for productivity measurement, Eurostat uses the domestic employment concept in the structural indicators.

For the EU and its Member States, Eurostat uses National Accounts labour data for hours worked. Since Eurostat does not receive explicit hours worked data from some Member States, it therefore multiplies the number of persons employed by average hours worked per year. In most cases, the figure for average hours worked per person is drawn from OECD's published figures. Hours actually worked data do not always reach the same standard of reliability as other national accounts data.

Research and development expenditure

The figures relating to GDP are compiled in accordance with ESA 95 (see real GDP per capita, above) and calculated using current prices.

Basic compilations of national R&D statistics are provided to Eurostat by EU Member States, Candidate Countries, EFTA and other European Countries. National Statistical Offices, Research Councils, and Ministries are often responsible for R&D data compilations at national level. The national compilations are provided in different breakdowns and in the basic units national currencies (NAC).

Derived indicators and aggregates are calculated by Eurostat on the base of the data collected, sometimes together with Eurostat estimations and internal Eurostat data sources. The data are normally collected by the national statistical institutes through sample or census surveys, from administrative registers or through a combination of sources. Even though national surveys follow the guidelines and definitions outlined in the *Frascati manual* and the *Regional Manual*, data are not completely comparable. Differences include different survey methods and peculiarities of national R&D systems. Geographical aggregates (such as EU-27) are calculated by Eurostat as the sum of the national data expressed in a common unit. If national data is missing, estimates are made by Eurostat before summing. Estimates are normally not disseminated at national level but only used for calculation of the aggregates. European aggregates can sometimes deviate from what is achieved when summing up the national data. This can be due to dissemination of national data outside the normal data treatment cycles. It can also be due to possible inconsistencies in some countries data e.g. revisions of totals but not breakdowns. Within the European aggregates consistency are however always assured in such a way that breakdowns are proportionally adjusted to sum up to the total.

Energy intensity

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 living in private households (however note that several of the employment indicators presented in this chapter use the age brackets of 20-64 or 25-64). 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.) are not included. Only the employment of the residents in the country is considered. All sectors of the economy are covered.

The Labour Force Survey is a rotating random sample survey of persons in private households. It is organised in thirteen modules, covering their demographic background, labour status, employment characteristics of the main job, hours worked, employment characteristics of the second job, time-related underemployment, search for employment, education and training, previous work experience of persons not in employment, situation one year before the survey, main labour status, income, and technical items relating to the interview. The labour force statuses used in the survey are based on 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. Inactive persons are those who neither classified as employed nor as unemployed.

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.

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 LFS data for the period 2000-2004 refer to the second quarter, except FR and AT (quarter 1). The LFS data for 2005 onwards are annual averages of the 4 quarters. 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 DK, IE, LU, CY, EE, LT, LV, MT or SI 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.

The indicator is based on the Nomenclature of Territorial Units for Statistics (NUTS) as last modified in February 2007. NUTS 2006 provides a uniform, consistent breakdown of territorial units for the production of regional statistics for the EU. Level 2 of the nomenclature has 271 regions: Belgium (11), Bulgaria (6), the Czech Republic (8), Denmark (5), Germany (39), Ireland (2), Greece (13), Spain (19), France (26), Italy (21), Hungary (7), the Netherlands (12), Austria (9), Poland (16), Portugal (7), Romania (8), Slovenia (2), Slovakia (4), Finland (5), Sweden (8) and the United Kingdom (37). Estonia, Cyprus, Latvia, Lithuania, Luxembourg and Malta are all considered as single regions at NUTS 2 level. For a list of the European statistical regions see http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction.

2 Sustainable consumption and production

'To promote sustainable consumption and production patterns' (overall objective of the EU Sustainable Development Strategy for the key challenge 'sustainable consumption and production')

Overview of main changes

Changes in consumption and production patterns since 2000 show some highly unfavourable but also some highly favourable trends. On the one hand, consumption of materials and electricity, as well as the generation of hazardous waste, are still increasing (both in absolute terms and on a per capita basis). On the other hand, the final energy consumption and the amount of non-mineral waste generated in the EU have declined, and the share of waste recycled or composted has increased. Moreover, there have been substantial reductions in the emissions of important air pollutants, and there has been progress related to production patterns regarding the ecological dimension of corporate social responsibility and towards more environmentally friendly agricultural practices.

Table 2.1: Evaluation of changes in the sustainable consumption and production theme *(EU-27, from 2000)* ([1])

Level 1	Level 2	Level 3
	Resource use and waste	
	Non-mineral waste (*)	Domestic material consumption
		Hazardous waste (*)
		Recycled and composted municipal waste
		Atmospheric emissions
	Consumption patterns	
Resource productivity	Electricity consumption of households	: Number of people in households
		: Household expenditure
		Final energy consumption
		Car ownership
	Production patterns	
	Environmental management systems (**)	Ecolabels
		: Area under agri-environmental commitment
		Organic farming (***)
		Livestock density index (**)

(*) From 2004. (**) From 2003. (***) From 2005.

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

Only relative decoupling of resource use from economic growth

Developments in resource productivity (measured as the ratio between GDP and domestic material consumption) have been moderately unfavourable for the period 2000 to 2007. Although an increase in resource productivity between 2000 and 2007 indicates that the EU has become more efficient in the way it uses its resources (GDP grew at a faster rate than domestic material consumption), the demand for materials (and the associated environmental pressures) continued to increase. The decoupling of resource use from economic growth was therefore only relative.

Resource use and waste

Consumption of materials continues to rise

Domestic material consumption increased moderately in absolute and per capita terms over the period 2000 to 2007. This was driven by an increase in domestic extraction and imports stemming from a growing demand for minerals.

Waste management improving, although more hazardous waste

The generation of waste shows both favourable and unfavourable trends. On the one hand, the generation of non-mineral waste in the EU decreased between 2004 and 2008, and municipal waste treatment shifted significantly towards recycling and composting between 2000 and 2009. On the other hand, the generation of hazardous waste rose considerably between 2004 and 2008.

Decrease in atmospheric emissions

Man-made emissions to the atmosphere of sulphur oxides, nitrogen oxides, non-methane volatile organic compounds and ammonia all fell considerably between 2000 and 2008.

Consumption patterns

More but smaller households with increasing expenditures

EU household expenditure rose steadily between 2000 and 2007, but dropped slightly in 2008 and 2009, as a consequence of the economic crisis. In parallel, the number of people per household decreased, reflecting a continuous trend towards more but smaller households.

Final energy consumption decreased in 2009

Between 2000 and 2009, the electricity consumption of households rose substantially, but final energy consumption decreased slightly mostly as a consequence of the economic crisis.

More and more cars on the roads

Between 2000 and 2009 the number of passenger cars per 1 000 inhabitants was still on the rise, albeit at a slower pace than during 1990 to 2000.

Production patterns

Increase in ecolabel licenses and organisations certified with an environmental management system

European businesses are increasingly integrating social and environmental concerns into their operations and interactions with stakeholders on a voluntary basis, which is a concept known as 'corporate social responsibility'. The number of organisations having implemented a certified environmental management system according to the 'Eco-Management and Audit Scheme' Regulation rose significantly between 2003 and 2010. In addition, the number of EU ecolabel licenses increased considerably between 2000 and 2010, but market shares of the related products remain low.

Signs of agricultural de-intensification

With regard to sustainable agricultural production in the EU, the share of agricultural area under agri-environmental commitments and the share of organic farming in total utilised agricultural area increased notably until 2009. In addition, the number of livestock units per hectare showed a favourable decline between 2003 and 2007.

Consumption and production and sustainable development

Consumption and production patterns contribute to well-being and quality of life

The scale of today's consumption and production patterns jeopardises the improvement of human well-being

Sustainable consumption and production means both better quality of life and minimising environmental impacts

A first step towards achieving sustainable consumption and production: The Johannesburg Plan of Implementation and the 10YFP on SCP

A holistic perspective is needed to attain the requirements for sustainable development

Scale and efficiency of material consumption are important factors for environmental degradation and for breaking the link between economic growth and resource use

Europe's consumption patterns have global impacts

The impact of household consumption patterns

Production and consumption of goods and services contributes to human well-being through the satisfaction of physical and other needs such as food, clothing and accommodation and everything else that influences today's quality of life. However, current consumption and production patterns at the same time impact negatively on the natural environment and human well-being itself, in particular by depleting the earth's natural resources and by damaging ecosystems. The resulting phenomena such as climate change, desertification, biodiversity loss and depletion of the non-renewable resource base will strain a society's capability to fulfil its basic needs. These phenomena are exacerbated by continuously increasing consumption levels resulting from a growing human population and rising per capita consumption. Growing wealth and a tendency known as the 'rebound effect', whereby gains in technical efficiency resulting in lower costs stimulate further consumption, amongst other things, are factors behind this increase. Moreover, the benefits of consumption and production, as well as the negative effects, such as pollution and waste generation, which affect human well-being in terms of health and welfare, are unevenly distributed amongst the members of the society.

Making consumption and production patterns more sustainable means responding to basic needs and bringing a better quality of life while at the same time minimising the consumption of natural resources (raw materials, energy, land, water, etc.). This includes reducing or eliminating waste and pollutants through the use of better management systems, improved product and service design, best available technologies and by supporting sustainable lifestyles, notably by means of education and fiscal measures. In order to deal with these challenges, governments committed themselves at the 1992 'Earth Summit' in Rio de Janeiro to promote sustainable consumption and production patterns. Ten years later, at the 2002 'World Summit' in Johannesburg, a Plan of Implementation strongly focused on sustainable consumption and production was adopted. The plan called for the development of a 10-year framework of programmes aimed at promoting regional and national initiatives and coordinating and strengthening actions across stakeholders to accelerate the shift towards sustainable consumption and production. The work is coordinated by UNEP and UN DESA under the Marrakech Process, which is a global multi-stakeholder process to support the implementation of sustainable consumption and production.

Because consumption and production are mutually inter-dependent, it is important to adopt a holistic lifecycle perspective of goods and services that addresses natural resource extraction, production and distribution, consumption, as well as disposal or reuse. Only by taking such a comprehensive approach can consumption and production systems become more sustainable. The indicators outlined in this chapter are consequently structured according to the sub-themes 'resource use and waste', 'consumption patterns' and 'production patterns'. The indicators of domestic material consumption and resource productivity monitor the flow of energy and raw materials through the economy, in terms of both scale and efficiency, thus addressing the EU Sustainable Development Strategy's key objective of 'breaking the link between economic growth and resource use'. These material flows also influence the amount of waste and emissions produced, which can directly affect the well-being of the population and the environment. At the other end of the chain, waste levels are also influenced by waste treatment. Increasing waste recovery through recycling and composting reduces demand for raw materials and therefore resource extraction. Increases in imports of materials and goods have the potential to increase the global impacts of EU consumption patterns, affecting the environment and economy and public health of the exporting countries. There is a risk that improvements in the EU are, in fact, a result of shifting environmental and health pressures and impacts to other parts of the planet.

Consumption, the ultimate end to which production activities are directed, is characterised through the number, size and composition of households and their expenditure patterns. These characteristics influence all indicators in the 'consumption patterns' sub-theme, especially electricity consumption. In addition, increasing expenditure on transport usually goes hand-in-hand with rising motorisation rates and increasing energy demand. Growth in the transport intensity of

Rising demand for transport due to passenger and freight transport

Energy consumption and agricultural production impact on GHG emissions

Negative impacts on the environment and human health

Pollutant emissions are harmful to both the environment and human health

Environmental management systems and ecolabels improve products and their production processes

consumption, driven by more cars in households and more freight transport to cope with growing imports and exports lead to higher energy consumption and emissions of pollutants (particulate matter and ozone) and greenhouse gases. Sustainable consumption and production patterns are consequently also key elements in tackling climate change. Reduction in energy consumption and changes in the fuel mix, by switching to less carbon-intensive energy sources, are linked to lower CO_2 emissions. Livestock numbers and waste treatment through recycling and composting also influence greenhouse gas emissions. Climate change poses serious threats to the availability of natural resources. For example, certain regions are expected to suffer from increasing water scarcity due to the changing climate conditions.

Several linkages also exist between changes in consumption and production patterns and negative environmental and public health impacts. Waste treatment and disposal can cause environmental pollution and expose humans to harmful substances and disease-causing organisms, damaging their health. In addition, emissions of air pollutants such as sulphur oxides, nitrogen oxides, non-methane volatile organic compounds and ammonia from industry, transport and agriculture harm ecosystems by causing acidification, eutrophication or physical damage and reduced plant growth. Ground level ozone and particulate matter can lead to health impacts ranging from minor effects respiratory problems to premature mortality. 'Production patterns' play an important role in this regard. Environmental management systems such as the Eco-Management and Audit Scheme (EMAS) and eco-labels (such as the EU flower) aim to improve the number of environmentally sound processes and products and their uptake of these by businesses and consumers. More environmentally friendly agricultural practices and extensive livestock rearing can also have positive effects on biodiversity, landscape preservation and water and soil quality.

Box: 2.1: Objectives related to sustainable consumption and production in the EU 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 of products and processes and encouraging their uptake by business and consumers.

- Overall objective: To promote sustainable consumption and production patterns
- 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.
- For the priorities and flagship initiatives related to sustainable consumption and production in the Europe 2020 Strategy, see the respective section in the introduction chapter.

Further reading on sustainable consumption and production

Commission communication *on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan*, COM(2008) 397

European Commission, *Making sustainable consumption and production a reality. A guide for business and policy makers to Life Cycle Thinking and Assessment, Luxembourg*, Publications Office of the European Union, 2010

Eurostat, *Environmental statistics and accounts in Europe*. Luxembourg, Publications Office of the European Union, 2010

European Environment Agency, *The European Environment – state and outlook 2010* (http://www.eea.europa.eu/soer)

Hertwich, E., *et al.*, *Assessing the Environmental Impacts of Consumption and Production: Priority Products and Materials*, A Report of the Working Group on the Environmental Impacts of Products and Materials to the International Panel for Sustainable Resource Management, United Nations Environment Programme, 2010

Organisation for Economic Co-operation and Development, *Promoting Sustainable Consumption: Good practices in OECD countries*, Paris, OECD Publications, 2008

Organisation for Economic Co-operation and Development, *Household Behaviour and the Environment – reviewing the evidence*, Paris, OECD Publications, 2008

United Nations, *Paving the Way to Sustainable Consumption and Production*, Marrakech Process Progress Report including Elements for a 10-Year Framework of Programmes on Sustainable Consumption and Production (SCP), Background paper CSD18/2010/BP4

United Nations, *Trends in sustainable development: Towards Sustainable Consumption and Production*, New York, 2010

Resource productivity

Despite an increasing trend in resource productivity (measured as GDP divided by domestic material consumption) in the EU between 2000 and 2007, resource use has been growing

Commentary

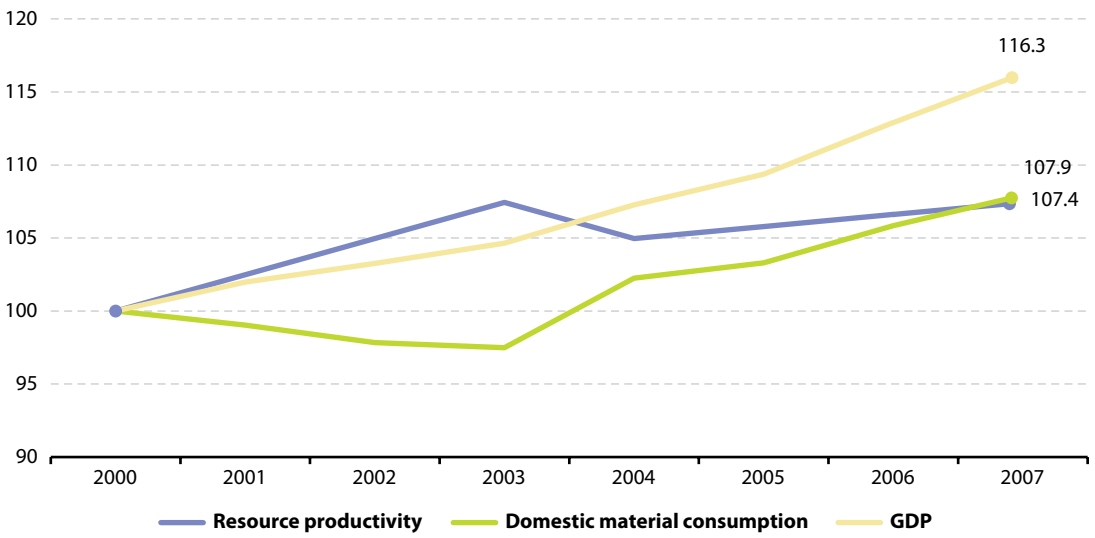
Resource productivity in the EU increased between 2000 and 2007, but the decoupling of material consumption from GDP was only relative

Resource productivity monitors the amount of gross value added (measured as GDP) an economy generates by using one unit of material (measured as domestic material consumption [DMC]), or, in other words, how productively an economy consumes resources in the creation of products and services for markets. If GDP increases more than DMC then the resource productivity increases.

Resource productivity in the EU increased from EUR 1.21 per kg in 2000 to EUR 1.30 per kg in 2007, representing an increase of about 1 % per year on average. The increase was particularly strong (2.4 % per year) during the economic downturn between 2000 and 2003, when DMC experienced a declining trend. This development was reversed in 2004 (DMC growing faster than GDP), followed by a period of relative decoupling from 2005 to 2007, during which GDP grew at a slightly higher rate (2.7 % per year) than DMC (1.8 % per year). Overall, during the period of 2000 to 2007 DMC increased at about half the growth rate of GDP, indicating that the increase in resource productivity was the result of a relative decoupling of resource use from economic growth.

Figure 2.1: Resource productivity, EU-27
(index 2000 = 100)

Period evaluated: 2000-2007
Average annual growth rates
Resource productivity: +1.0 %
Domestic material consumption: +1.1 %
GDP: +2.2 %



NB: Data for DMC and resource productivity are Eurostat estimates.

Source: Eurostat (online data codes: tsdpc100, tsdpc230, nama_gdp_k)

Resource productivity higher in old EU Member States

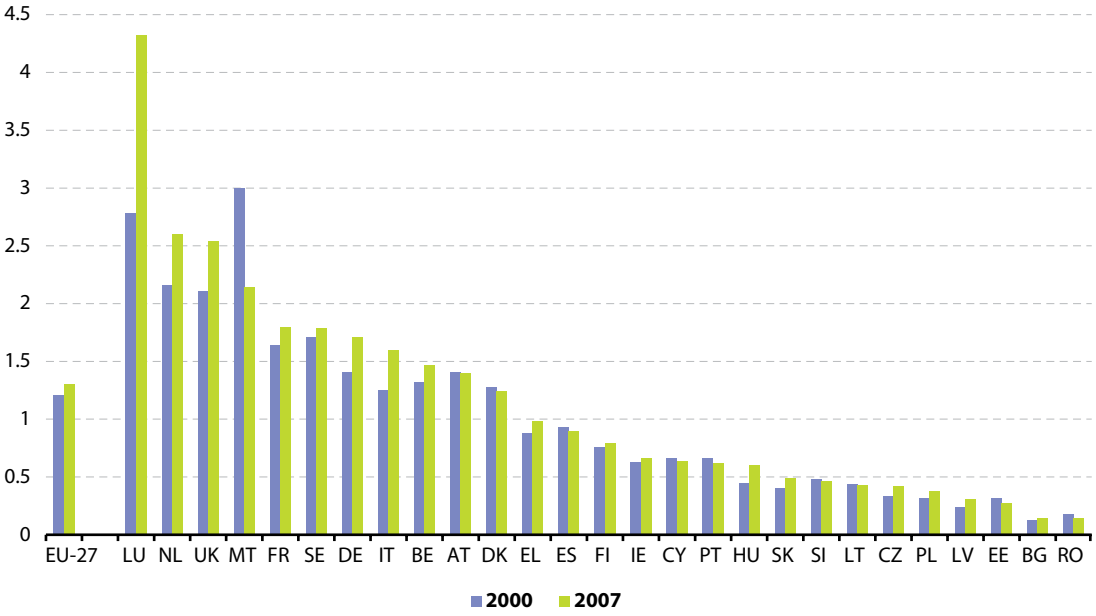
In 2007 resource productivity varied by a factor of more than 30 across EU Member States. It was significantly lower in the most recent EU Member States than in the 15 oldest Member States. Differences in resource productivity between countries are determined by many factors, including the structure of the economy (basic industry or raw material processing versus hi-tech manufacturing), the share of the service sector, the scale and patterns of consumption, the level of construction activities, and the main sources of energy ([2]).

([2]) European Environment Agency, *The European Environment – state and outlook 2010: Material resources and waste*, Publications Office of the European Union, 2010.

Between 2000 and 2007 resource productivity increased in all but ten countries. Particularly strong increases were apparent in the Czech Republic, Italy, Latvia, Luxembourg and Hungary, ranging from 3.5 % per year up to 6.5 % per year. In contrast, Estonia, Malta and Romania experienced notable declines in resource productivity over the same period, mainly due to high DMC growth rates outstripping GDP growth.

Resource productivity increased in all but ten EU Member States between 2000 and 2007

Figure 2.2: Resource productivity, by country
(EUR per kg)



Key figures in 2007:

Highest: Luxembourg: EUR 4.32/kg

Lowest: Bulgaria and Romania: EUR 0.14/kg

EU-27 average: EUR 1.30/kg

NB: data for EU-27, BE and CY are estimates.

Source: Eurostat (online data code: tsdpc100)

Plotting the Member States' annual DMC growth rates against GDP growth rates for the period 2000 to 2007 shows that a stable or decreasing DMC is associated with relatively low GDP growth rates only, whereas high GDP growth rates tend to be associated with moderate or high increases of DMC. Between 2000 and 2007, absolute decoupling of resource use from economic growth (decreasing DMC) only occurred in six countries (see Figure 2.3). Of the remaining 21 EU Member States, 11 showed relative decoupling with DMC increasing at a slower rate than GDP. Decoupling was not achieved in the ten remaining countries, where DMC increased faster than GDP, indicating that resource productivity declined in those countries during 2000 to 2007.

From 2000 to 2007, whilst six countries achieved absolute decoupling, in another ten countries DMC grew faster than GDP

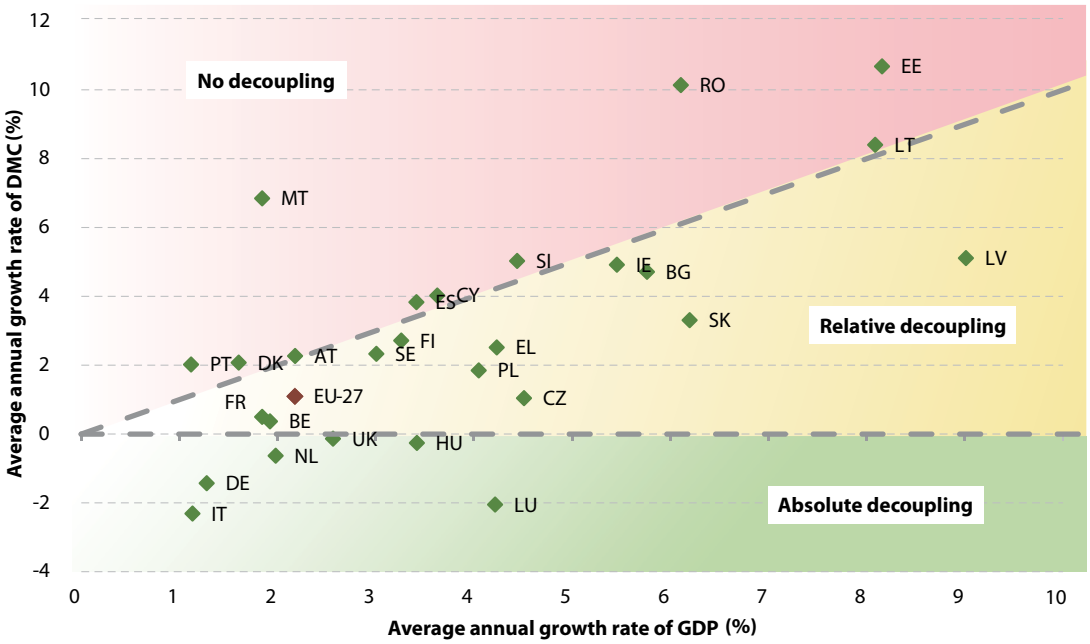
Figure 2.3: Domestic material consumption and GDP, by country
(average annual growth rates 2000-2007)

Decoupling of DMC from GDP over the period 2000-2007

No decoupling: DK, EE, ES, CY, LT, MT, AT, PT, RO, SI

Relative decoupling: EU-27, BE, BG, CZ, IE, EL, FR, LV, PL, SK, FI, SE

Absolute decoupling: DE, IT, LU, HU, NL, UK



NB: DMC data for EU-27, BE and CY are estimates.

Source: Eurostat (online data codes: tsdpc230, nama_gdp_k)

Indicator relevance

Typically, as economies grow, more materials such as energy, construction materials, and metals are needed. Extraction and use of these materials is in many cases associated with environmental pressures, and economic growth is therefore often linked with increasing environmental degradation. By using materials more efficiently and getting more economic value out of each unit used, it is possible to break this link, meaning that the economic can continue to grow ([3]) while the associated environmental pressures remain stable or even decline, which is described as 'absolute decoupling'.

The indicator provides insights into the decoupling of natural resource use from economic growth, which is a key objective of the EU Sustainable Development Strategy and the Europe 2020 Strategy. Decoupling of economic growth from environmental degradation is one of the main objectives of the EU Sustainable Development Strategy under the key challenge 'sustainable consumption and production'. Additionally, under the 'conservation and management of natural resources' key challenge, 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, thereby using renewable natural resources at a rate that does not exceed their regeneration capacity'. In addition, the Europe 2020 Strategy argues that 'increasing resource efficiency will be key to securing growth and jobs for Europe', and one of its seven flagship initiatives aims at 'A resource-efficient Europe' ([4]).

Definition

Resource productivity is the ratio between GDP (in chain-linked volumes) and domestic material consumption (see definition of following indicator).

([3]) Tim Jackson and Joan Martínez-Alier have questioned the paradigm of growth, suggesting that increasing prosperity doesn't necessarily need to be based on continued economic growth; see Jackson, T., Prosperity without growth? The transition to a sustainable economy, UK Sustainable Development Commission, 2009; and Martínez-Alier, J. et al., 'Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm', in *Ecological Economics*, 2010, 69(9), pp. 1741-1747.

([4]) Commission communication, *A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy*, COM(2011) 21.

Domestic material consumption

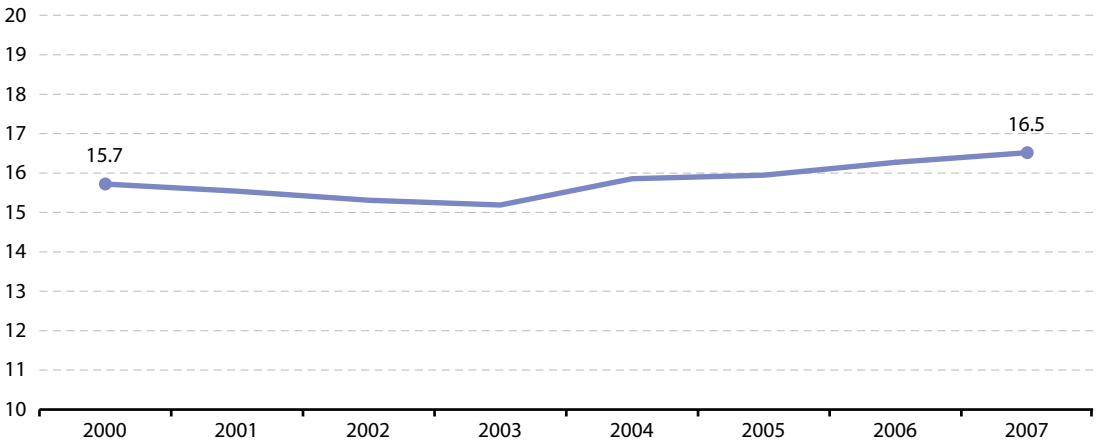
Domestic material consumption per capita in the EU increased between 2000 and 2007. This unfavourable development was driven by increases in domestic extraction and imports stemming from a growing demand for minerals

Commentary

The amount of materials used in the EU, measured as domestic material consumption (DMC), increased over the period 2000 to 2007 from 15.7 tonnes to about 16.5 tonnes per inhabitant (corresponding to a consumption of 45 kg of materials per inhabitant per day). Between 2000 and 2007, DMC per capita increased by 0.7 % per year. However DMC per capita actually fell by more than 1.2 % per year over the period 2000 to 2003, this was then more than offset by a following 2.1 % per year rise until 2007.

In 2007 EU inhabitants consumed 45 kg of material per day on average

Figure 2.4: Domestic material consumption per capita, EU-27
(tonnes per inhabitant)



Period evaluated: 2000-2007
Average annual growth rate: +0.7 %
Relative change: +5.1 %
Absolute change: +0.8 tonnes per inhabitant

NB: Eurostat estimates.

Source: Eurostat (online data codes: tsdpc220, demo_gind)

In 2007 17 EU Member States consumed more materials per inhabitant than the EU-27 average. Ireland and Finland, in particular, had per capita DMC more than twice the EU-27 average. On the other hand less material was used per inhabitant than the average in ten countries, including Germany, France, Italy and the UK, the four most populous Member States, which together make up more than half of the EU population. Factors explaining this variation in material consumption patterns across Europe include climate, population density, existing infrastructure, availability of raw materials versus reliance on imports, composition of the power generation sector, the rate of economic growth, and the structure of the economy ([5]).

The four most populous Member States have relatively low DMC per capita

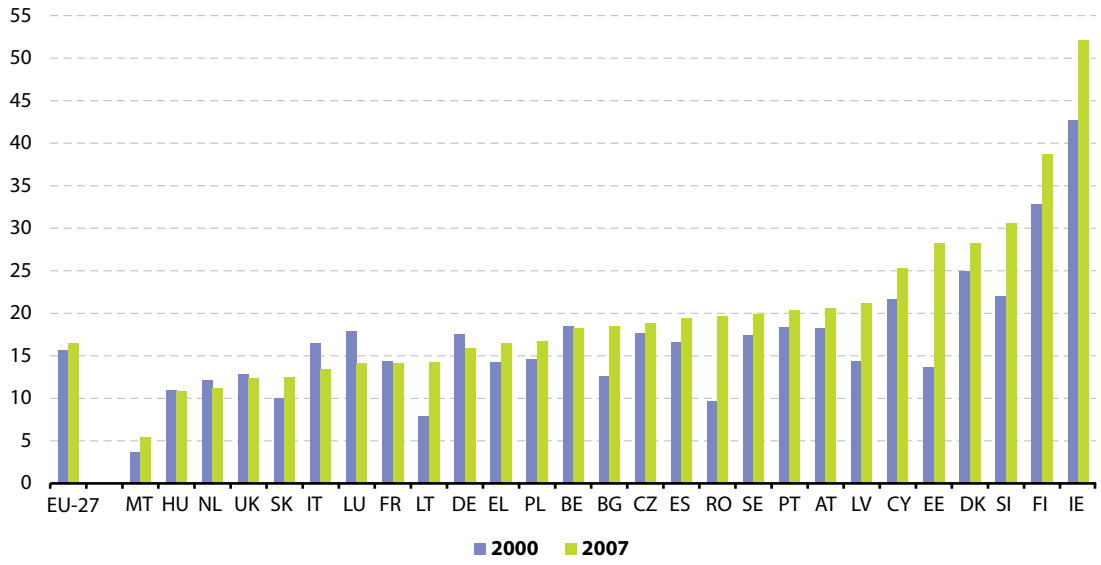
Between 2000 and 2007 DMC per capita increased in more than two-thirds of the EU Member States. Increases were particularly strong in the Baltic countries (Estonia, Latvia and Lithuania), in the two newest EU Member States Bulgaria and Romania, and in Malta, with growth rates ranging from 5.7 % per year up to 11 % per year. Estonia and Romania doubled the amount of materials used per capita over this period. Only eight countries reduced their DMC per capita, in particular Germany, Italy, Luxembourg and the Netherlands, all of which achieved decreases of more than 1 % per year. Both increases and decreases were mainly driven by changes in the consumption of non-metallic minerals.

DMC per capita rose in more than two-thirds of EU Member States between 2000 and 2007

([5]) European Environment Agency, *The European Environment – state and outlook 2010: Material resources and waste*, Publications Office of the European Union, 2010.

Figure 2.5: Domestic material consumption per capita, by country
(tonnes per inhabitant)

Key figures in 2007:
Lowest: Malta: 5.5 tonnes per inhabitant
Highest: Ireland: 52.7 tonnes per inhabitant
EU-27 average: 16.5 tonnes per inhabitant



NB: Eurostat estimates.

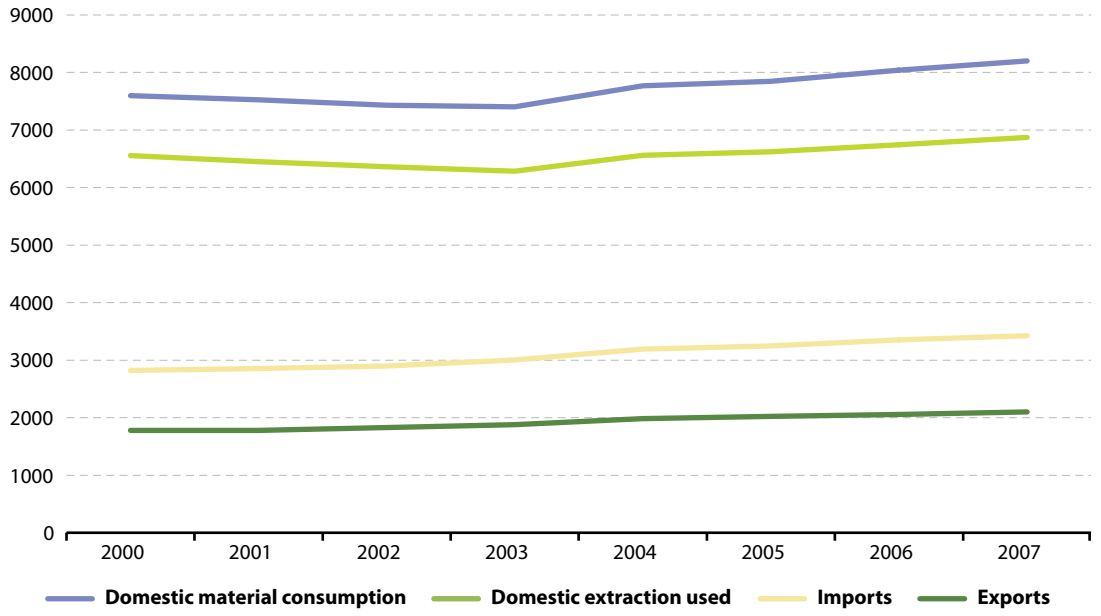
Source: Eurostat (online data codes: tsdpc220, demo_gind)

Imports and exports of materials have increased steadily since 2000

The increase in DMC from 7 598 million tonnes in 2000 to more than 8 200 million tonnes in 2007 represents an average annual growth of 1.1 %. The decline of 0.8% per year from 2000 to 2003 goes hand in hand with the economic downturn during that period ([6]) and was a result of a reduction in domestic extraction used (see Figure 2.6). However, exports and, even more so, imports of materials increased constantly during the period 2000 to 2007. Between 2003 and 2007 DMC rose by 2.6 % per year, with imports rising particularly strongly by an average of 3.3 % per year. This can be put in the perspective of the acceleration of GDP growth between 2003 and 2007.

Figure 2.6: Components of domestic material consumption, EU-27
(million tonnes)

Change over period 2000-2007
Average annual growth rates
DMC: +1.1 %
Domestic extraction used: +0.7 %
Imports: +2.8 %
Exports: +2.4 %



NB: Eurostat estimates.

Source: Eurostat (online data code: tsdpc220)

([6]) See indicators 'resource productivity' and 'real GDP per capita' in the 'socioeconomic development' chapter.

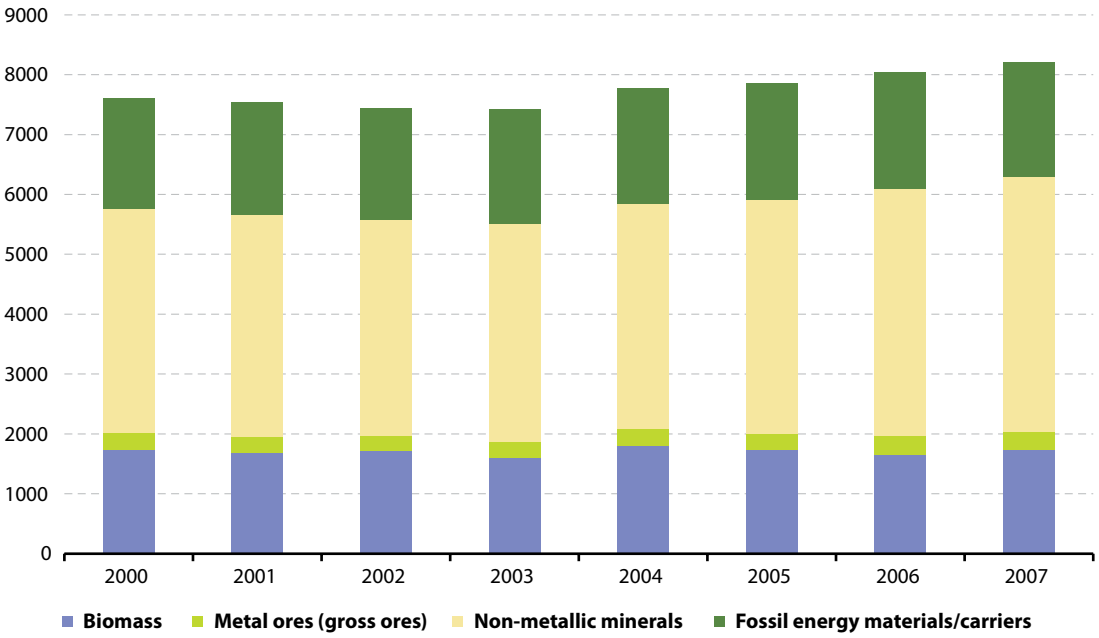
Non-metallic minerals represented the bulk of materials consumed in the EU in 2007 with a share of 51.8 %, followed by fossil energy materials/carriers (23.3 %) and biomass (21.1 %). Non-metallic minerals was also the category showing the largest increases between 2000 and 2007, growing at 1.9 % per year.

More than half of the materials consumed in the EU in 2007 were non-metallic minerals, which also grew the fastest between 2000 and 2007, driven by sand and gravel for construction

Non metallic minerals include in particular sand and gravel. While demand for sand and gravel between 2000 and 2007 fell by about 20 % in Germany, Italy and the Netherlands, it grew by more than 50% in 13 EU Member States (EL, PT, ES, PL, IE, RO, SI, SK, BG, LT, EE, LV, MT). As most of the sand, gravel and other non-metallic minerals is used for construction, the construction sector was obviously a major driving force behind the changes in material consumption across the EU.

Growth in use of fossil energy materials/carriers was less pronounced, increasing by 0.5 % per year from 2000 to 2007, and even reversing in 2007 when demand fell by 1.9 % compared with 2006. This resulted in a reduction in EU energy consumption in 2007 ([7]). On the other hand, biomass demand declined slightly by 0.1 % per year over the period 2000 to 2007.

Figure 2.7: Domestic material consumption by material, EU-27
(million tonnes)



NB: Eurostat estimates; the categories 'waste' and 'other products' are not shown.

Source: Eurostat (online data code: tsdpc230)

Indicator relevance

Domestic material consumption (DMC) is a measure of the absolute level of the use of natural resources. In environmental terms it can be seen as an indicator reflecting all materials emitted from or accumulated in a given region. DMC is used as a proxy for the indicator raw material consumption (RMC) that is currently under development. RMC includes upstream flows related to imports and exports of finished and semi-manufactured products in the form of raw material equivalents (RME), that is, all raw materials needed worldwide to produce imported and exported commodities. However, DMC and RMC are only rough proxies for measuring the overall environmental impacts of resource use, because materials derived from different sources have very different impacts on the environment.

([7]) See indicator 'final energy consumption'.

The Brundtland Report points out that the demand for raw materials from the industrialised countries has led to serious environmental impacts in the developed and developing countries. Developing countries face the dilemma of having to export commodities in order to earn the foreign exchange needed for growth, while also having to minimise damage to the environmental resource base supporting this growth. Unsustainable development may arise not only from overuse of certain commodities but from manufactured goods that are potentially polluting. The EU Sustainable Development Strategy regards the management and efficient use of resources as one of the means towards sustainable development and 'improving resource efficiency to reduce the overall use of non-renewable natural resources and the related environmental impacts of raw materials use' is an operational objective of the Strategy.

Definition

Domestic material consumption measures the total amount of materials directly used by an economy. It 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.

Non-mineral waste

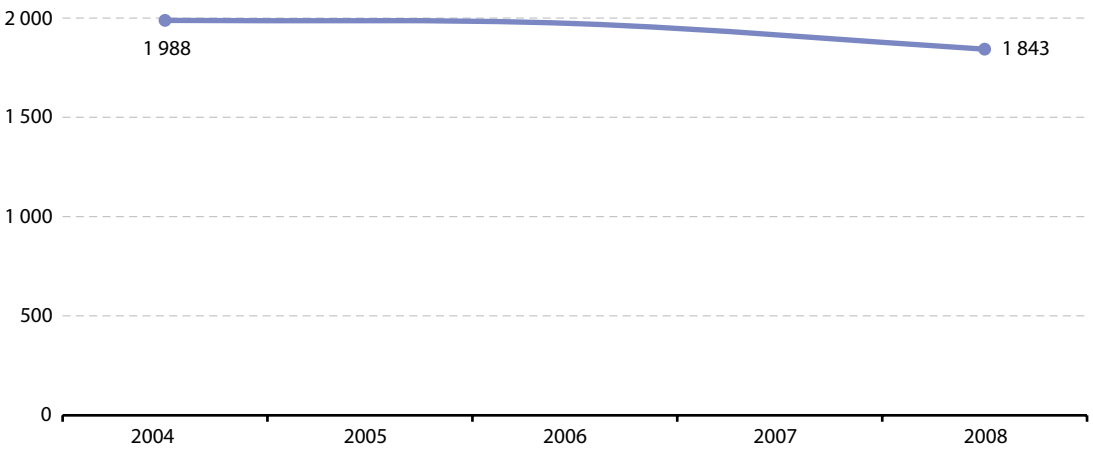
Between 2004 and 2008 the amount of non-mineral waste per capita generated in EU decreased considerably

Commentary

The amount of non-mineral waste generated per EU inhabitant declined by an annual average rate of 1.9 % from 1 988 kg in 2004 to 1 843 kg in 2008. This reflects reductions in almost two-thirds of the Member States, which were particularly strong in Cyprus and Sweden.

Less waste generated per inhabitant

Figure 2.8: Total non-mineral waste generation per capita
(kg per inhabitant)



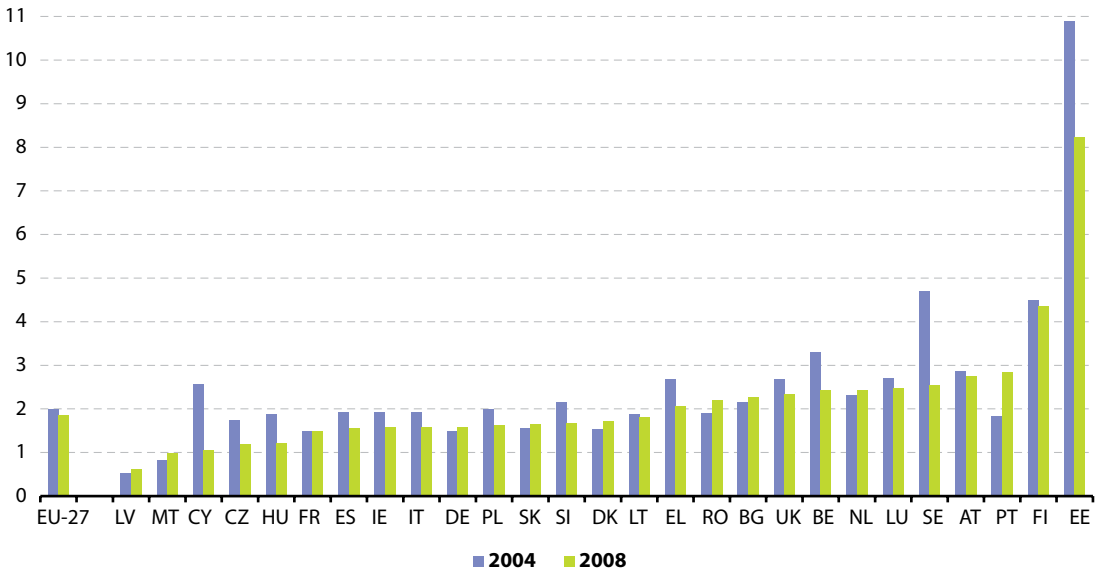
Source: Eurostat (online data code: tsdpc210)

The exceptionally high arising of non-mineral waste in Estonia is mainly due to large amounts from the energy sector, originating from the enrichment and incineration of oil shale. This also explains the high amount of hazardous waste generated in Estonia (see indicator 'hazardous waste' below). In addition, considerable amounts of wood waste contribute to the high figures in Estonia and Finland. The sharp fall of the indicator for Sweden by about 46 % from 2004 to 2008 is the result of the re-classification of wood wastes and animal/vegetal wastes as by-products.

Generation of non-mineral waste per EU inhabitant fell in almost two-thirds of Member States

Figure 2.9: Total non-mineral waste generation per capita, by country (tonnes per inhabitant)

Key figures in 2008:
Lowest: Latvia with 606 kg per inhabitant
Highest: Estonia with 8 216 kg per inhabitant
EU-27 average: 1 843 kg per inhabitant



NB: 2004 data for FR, HU, MT, PT and RO are estimates, 2008 data for HU, LT, MT and PT are estimates or provisional.

Source: Eurostat (online data code: tsdpc210)

Non-mineral waste generation however increased in nine Member States, in particular in Portugal with a growth rate of more than 11 % per year between 2004 and 2008.

Three categories (household, combustion and animal/vegetal wastes) accounted for more than 50 % of non-mineral waste generated in 2008

The most important non-mineral waste categories were household and similar waste, followed by combustion waste and animal and vegetal waste. Together these three categories accounted for more than 50 % of the non-mineral waste generated in 2008. However, it has to be noted that non-mineral waste represents only about one-third of total waste generation; in 2008 mineral wastes, soil and dredging spoil accounted for about 65 % of total waste generation in the EU.

The reductions achieved in animal and vegetal wastes (-5.2 % per year), mixed and undifferentiated materials (-12.4 % per year) as well as wood wastes (-5.5 % per year) contributed most to the decline in non-mineral waste generation between 2004 and 2008 (-1.1 % per year). The decreases in household and similar wastes (-1.0 % per year) and combustion wastes (-0.8 % per year) were less pronounced. Other categories such as metallic wastes (+4.5 % per year) and sorting residues (+8.5 % per year) increased their quantities over the same period.

Manufacturing industries and households produced almost half of the EU's non-mineral waste

Almost half of the non-mineral waste generated in the EU in 2008 came from manufacturing industries (26.3 %) and households (23.4 %), followed by waste management activities with 13.6 %.

Indicator relevance

Waste represents a considerable loss of resources in the form of materials and energy. As a result the EU Sustainable Development Strategy has set 'avoiding the generation of waste and enhancing the efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling' as one of the operational objectives of the key challenge 'conservation and management of natural resources'. Measures aimed at reducing the overall environmental impacts of waste generation and management are set out in the thematic strategy on the prevention and recycling of waste ([8]) and in the revised Framework Directive on waste ([9]).

([8]) Commission communication, *Taking sustainable use of resources forward: A Thematic Strategy on the prevention and recycling of waste*, COM(2005) 666.
([9]) Directive 2008/98/EC on waste.

The indicator 'non-mineral waste generation' is used instead of 'total waste generation' because non-mineral waste is considered to reflect the general trend in waste generation more accurately and in a more comparable way than when including mineral wastes.

Definition

This indicator presents the amount of non-mineral waste generated, expressed in kg per capita and per year. The indicator covers hazardous and non-hazardous waste from all economic sectors, administrations and households, including waste from waste treatment (secondary waste) but excluding mineral waste, contaminated soils and dredging spoil.

Hazardous waste

Between 2004 and 2008 the amount of hazardous waste generated per capita in the EU rose considerably

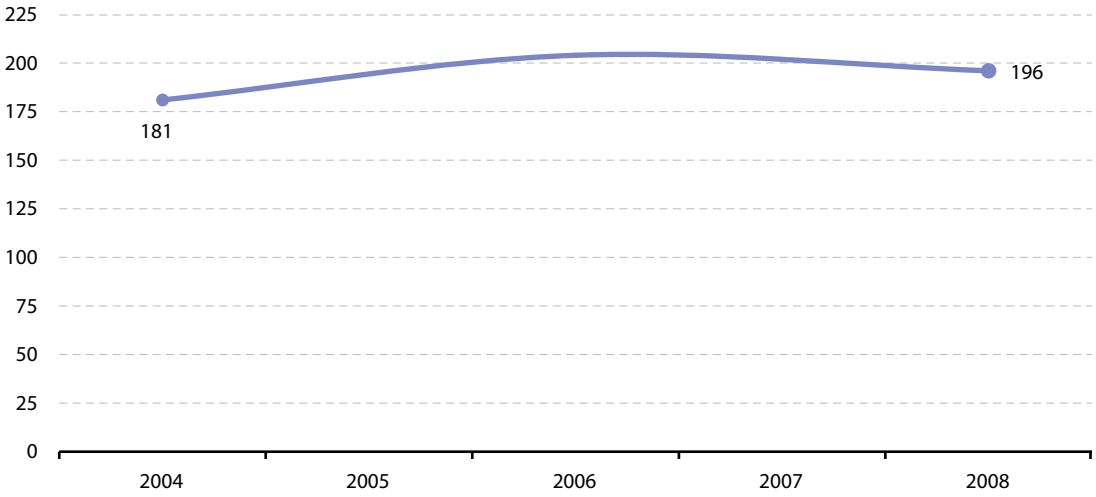
Commentary

Driven by construction and water-related activities

Between 2004 and 2008 the generation of hazardous waste per capita in the EU rose by 2 % per year from 181 kg to 196 kg. This was mainly driven by increases in hazardous waste from the construction sector (+10.3 % per year) and from water supply, sewerage, waste management and remediation activities (+7.2 % per year). In 2008, the manufacturing industry accounted for about 26 % of hazardous waste generated, followed by the construction sector (20.4 %) and the water supply, sewerage, waste management and remediation activities (14.8 %).

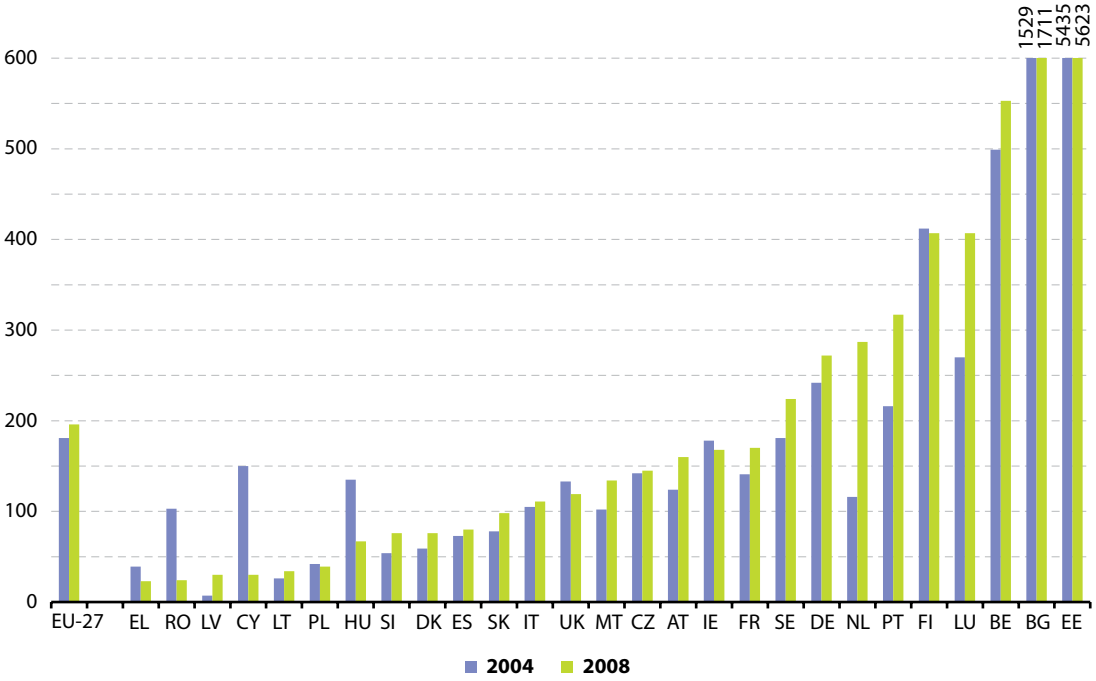
Figure 2.10: Total hazardous waste generation per capita
(kg per inhabitant)

Change over period 2004-2008
Annual average growth rate: +2 %
Relative change: +8.3 %
Absolute change: +15 kg per inhabitant



Source: Eurostat (online data code: tsdpc250)

Figure 2.11: Total hazardous waste generation per capita, by country
(kg per inhabitant)



Key figures in 2008:

Lowest:
Greece: 23 kg per inhabitant

Highest:
Estonia: 5 623 kg per inhabitant

EU-27 average:
196 kg per inhabitant

Source: Eurostat (online data code: tsdpc250)

In 2008 hazardous waste generation varied considerably between EU countries

Overall, disregarding the exceptional cases of Estonia and Bulgaria, generation of hazardous waste per capita varied by a factor of almost 25 across the EU in 2008. The high amounts of hazardous waste per capita in Estonia and Bulgaria can be explained by the use of oil shale in energy production (see indicator 'generation of non-mineral waste' above) and by mineral wastes generated in the mining sector respectively. Between 2004 and 2008 hazardous waste generation increased particularly strongly in Latvia (44 % per year) and the Netherlands (25 % per year), but fell strongly in other countries such as Cyprus (33 % per year) and Romania (30 % per year). Changes in the arising of mineral waste and contaminated soils can be seen as the drivers behind the fluctuations in the generation of hazardous waste observable across many countries.

Indicator relevance

Hazardous waste poses greater threats to human well-being and the environment in comparison to non-hazardous waste. The sources of hazardous waste are manifold and range from household wastes (such as lead acid batteries or fluorescent tubes) to industrial wastes (such as chemical wastes, acid, alkaline and saline wastes, combustion wastes and contaminated soils).

The EU Sustainable Development Strategy addresses the topic of hazardous waste generation through the key challenge 'conservation and management of natural resources'. The Framework Directive on waste ([10]) aims at sound management and control of hazardous waste, which implies that production, collection, transportation, storage and treatment are carried out in a way to safeguard human health and the environment.

Definition

The indicator generation of hazardous waste presents the amount of hazardous waste generated in the EU-27 and per Member State, expressed in kg per inhabitant and year. Hazardous waste covers all economic sectors and from households, including waste from waste treatment (secondary waste). The indicator comprises all waste categories that are classified as hazardous according to the definition of the Framework Directive on waste ([11]) and, accordingly, excludes radioactive waste.

([10]) Directive 2008/98/EC on waste.
([11]) Ibid.

Recycled and composted municipal waste

The share of recycled and composted municipal waste increased considerably between 2000 and 2009 in the EU. Waste incineration also rose, but waste disposal through landfill declined substantially

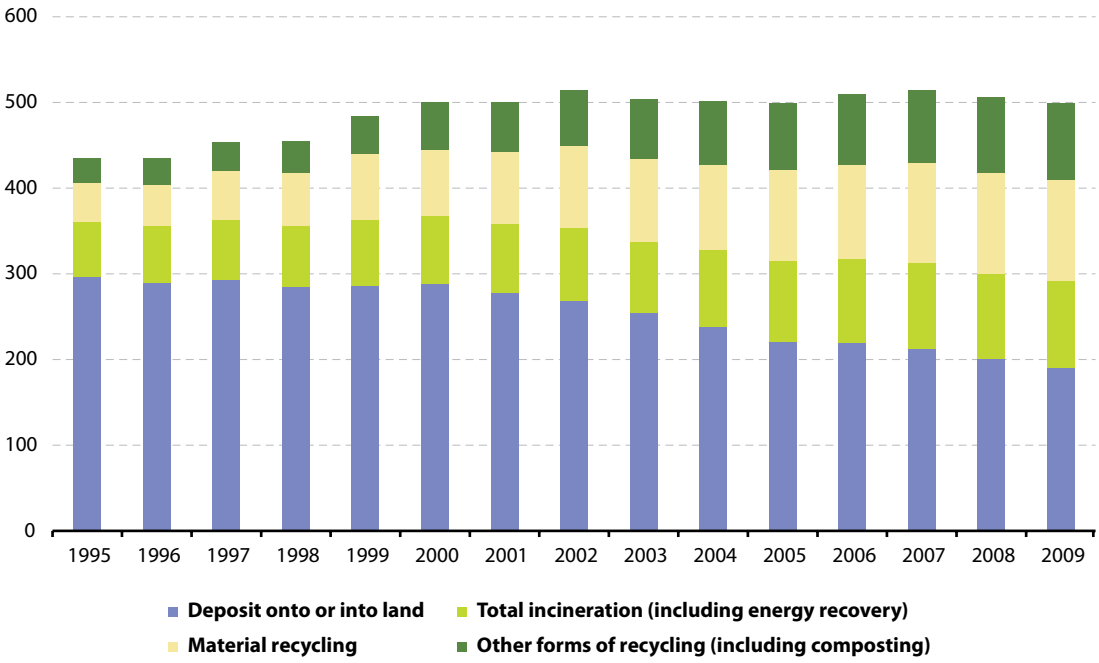
Commentary

Between 2000 and 2009 municipal waste treatment in the EU changed significantly in favour of recycling and composting

Between 2000 and 2009 municipal waste treatment in the EU changed significantly. By 2009, 38.2 % of municipal waste was placed in landfills, compared with 57.6 % in 2000. This 4.5 % annual reduction from 2000 to 2009 supports the objectives of the EU directive on the landfill of waste ([12]). During the same period, the amount of municipal waste incinerated, recycled or composted increased substantially. Incineration rose from 16 % in 2000 to over 20 % in 2009, representing an average annual growth of 2.8 %. Similarly, recycling rose by an average of 4.7 % per year from about 16 % in 2000 to over 23 % in 2009. Composting showed the biggest average increase of 5.5 % per year from 11 % in 2000 to almost 18 % in 2009. Recycling and composting together accounted for about 41 % of municipal waste treatment in 2009.

Figure 2.12: Municipal waste treatment, by type of treatment method, EU-27 (kg per capita)

Period evaluated: 2000-2009 (share of recycled and composted waste)
Average annual growth rate: +5 %
Share in 2000: 26.6 %
Share in 2009: 41.4 %



Source: Eurostat (online data code: tsdpc240)

Indicator relevance

Recycling and composting allow decreasing the negative environmental impacts of waste generation and are therefore important components 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 primary resource extraction.

([12]) Directive 1999/31/EC on the landfill of waste.

In order to minimise the environmental impacts of waste and to reap any possible benefits, a hierarchy of options for managing waste is described in the revised Framework Directive on waste ([13]). Priority should be given to avoiding waste generation, followed by reuse, recycling, other forms of recovery (e.g. energy recovery) and disposal. Incineration without energy recovery and landfill are considered the least environmentally friendly methods. 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

Municipal waste treatment presents the amount of municipal waste recovered through recycling and composting as well as the amount disposed of through landfilling 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.

([13]) Directive 2008/98/EC on waste.

Atmospheric emissions

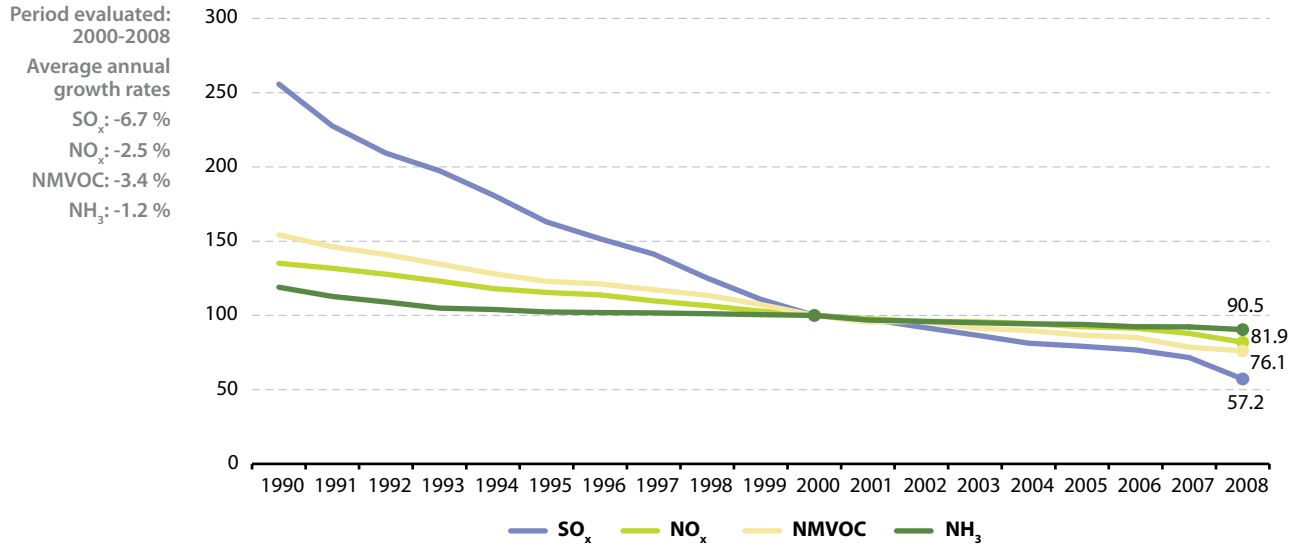
Between 2000 and 2008 emissions of air pollutants contributing to acidification, eutrophication and ground-level ozone fell considerably

Commentary

Pollutant emissions have fallen considerably

Between 2000 and 2008 emissions of sulphur oxides (SO_x), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOC) and ammonia (NH_3) declined substantially. The reductions ranged from 1.2 % per year (NH_3) to 6.7 % per year (SO_x), but were generally slower than those recorded from 1990 to 2000 when falls were between 1.7 % per year (NH_3) and 9.0 % per year (SO_x).

Figure 2.13: Atmospheric emissions, EU-27
(index 2000 = 100)



Source: European Environment Agency, Eurostat (online data codes: tsdpc260, tsdpc270, tsdpc280 and tsdpc290)

In 2008 energy-related sources accounted for 80 % of SO_x emissions, after declining by 5.5 % per year since 2000

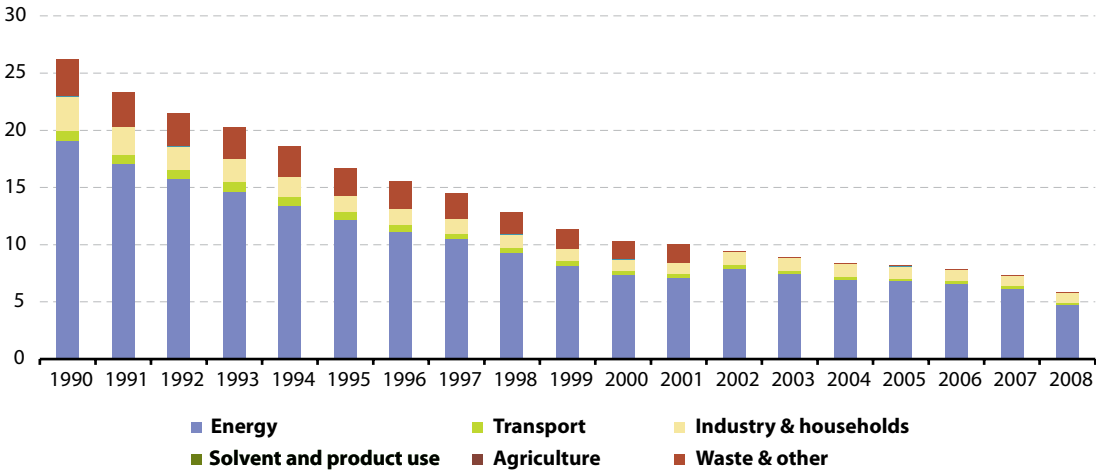
Of the four pollutants monitored here, SO_x emissions decreased most. On average, they fell by 6.7 % per year from about 10 million tonnes in 2000 to slightly below 6 million tonnes in 2008. Energy production and use, in particular through the burning of fuel in public power and heat generating plants, is the main source for SO_x emissions, accounting for 80 % of total emissions in 2008. Between 2000 and 2008 emissions from energy-related sources fell by 5.5 % per year, mainly because of switching fuel away from high sulphur solid and liquid fuels to low sulphur fuels such as natural gas ([14]).

Due to the substantial cuts in SO_x emissions, nitrogen is now the main acidifying component in the air

The decreases in SO_x emissions slowed down during 2000 to 2008 compared with 1990 to 2000 when emissions fell by 9 % per year. In the previous decade, the significant structural changes in eastern European countries since the early 1990s have contributed to lower SO_x emissions. In recent years however, due to high energy prices, coal use by power plants in some countries is again increasing ([15]). Nevertheless, due to the significant reductions in sulphur oxides emissions in the EU both before and after 2000, nitrogen (emitted in the form of nitrogen oxides and ammonia; see the indicators on NO_x and NH_3 emissions below) has replaced sulphur as the principal acidifying component in the air ([15]).

([14]) EEA (2010) *European Union emission inventory report 1990–2008 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP)*, EEA Technical report No. 7/2010.
([15]) EEA (2010) *The European environment — state and outlook 2010: Air pollution*. Copenhagen: European Environment Agency.

Figure 2.14: Emissions of sulphur oxides by source sector, EU-27
(million tonnes)



Change over period 2000-2008:

Average annual growth rate:
-6.7 %

Strongest absolute change:
Energy: -2668 tonnes

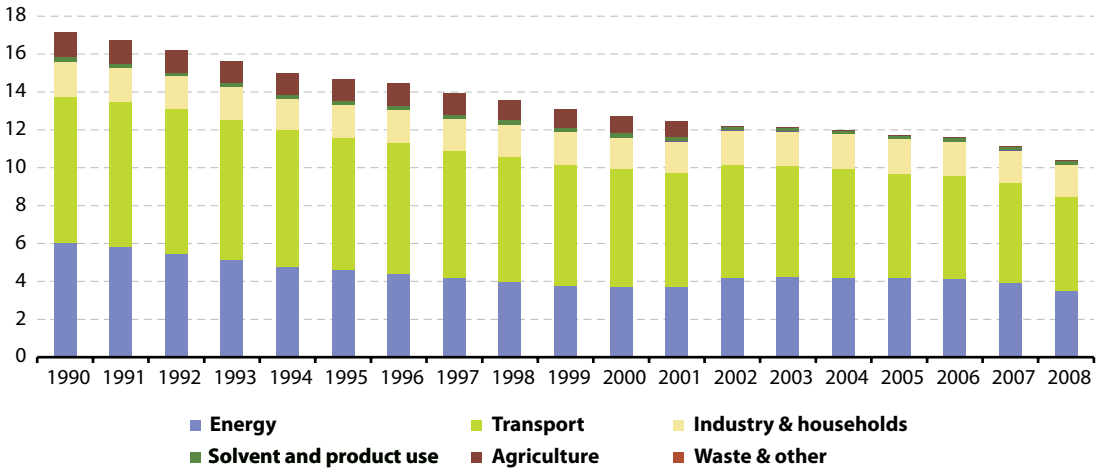
Strongest relative change:
Energy: -36.2 %

Source: European Environment Agency, Eurostat (online data code: tsdpc260)

EU emissions of NO_x mainly stem from transport and energy production and use, where NO_x is emitted during fuel combustion. In 2008 these two sources accounted for more than 80 % of total NO_x emissions. The 2.5 % annual decline in NO_x emissions between 2000 and 2008 from 12.7 million tonnes to 10.4 million tonnes was mainly driven by a 2.8 % per year reduction in transport emissions ([16]). The decline in the energy sector was less pronounced at 0.7 % per year. The reductions in transport emissions are a result of the introduction of three-way catalytic converters in cars and stricter regulation of emissions from heavy goods vehicles across Europe. In the energy-related sources, measures such as the introduction of combustion modification technologies and fuel-switching from coal to gas have contributed to the decline in NO_x emissions ([17]).

The decline in NO_x emissions between 2000 and 2008 was largely driven by reductions in transport emissions of 2.8 % per year

Figure 2.15: Emissions of nitrogen oxides by source sector, EU-27
(million tonnes)



Change over period 2000-2008:

Average annual growth rate:
-2.5 %

Strongest absolute change:
Transport: -1 270 tonnes

Strongest relative change:
Transport: -20.5 %

Source: European Environment Agency, Eurostat (online data code: tsdpc270)

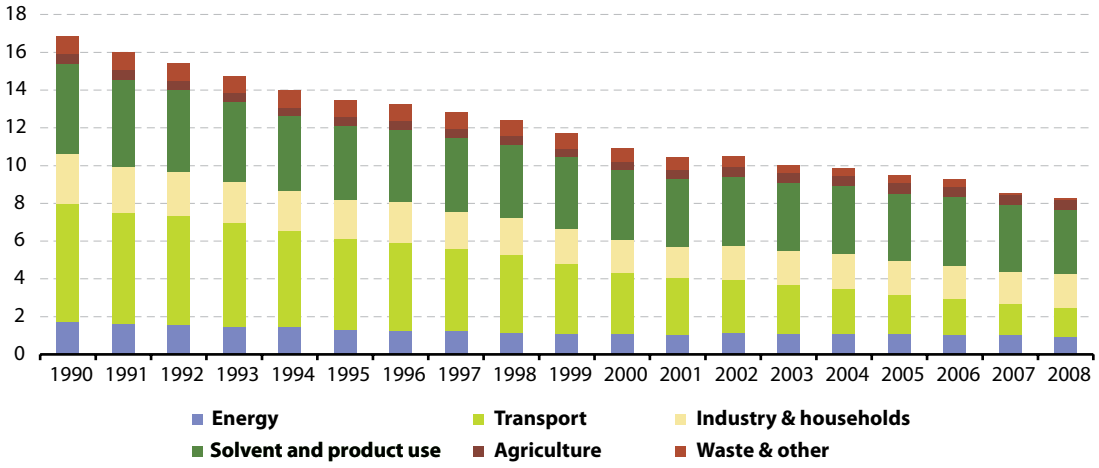
([16]) See the indicator 'emissions of nitrogen oxides from transport' in the 'sustainable transport' chapter.
([17]) EEA (2010) *European Union emission inventory report 1990–2008 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP)*, EEA Technical report No. 7/2010.

NMVOC emissions fell by 3.4 % per year from 2000 to 2008 mainly driven by reductions in transport emissions

Between 2000 and 2008 emissions of NMVOCs, which are important ground-level ozone precursors, fell by 3.4 % per year, from 10.9 million tonnes in 2000 to 8.3 million tonnes in 2008. The main contributor to NMVOC emissions reductions over this period was transport, with emissions falling by 9.2 % per year. Solvent and product use remained as the main source of NMVOC emissions in 2008 (more than 40 %), after declining only moderately by 1.0 % per year between 2000 and 2008. Overall, the decline in NMVOC emissions in the EU was mainly a result of the introduction of vehicle catalytic converters as well as the introduction of legislative measures limiting the use of and emissions from solvents in non-combustion sectors ([18]).

Figure 2.16: Emissions of non-methane volatile organic compounds by source sector, EU-27 (million tonnes)

Change over period 2000-2008:
Average annual growth rate: -3.4 %
Strongest absolute change: Transport: -1 756 tonnes
Strongest relative change: Transport: -53.9 %



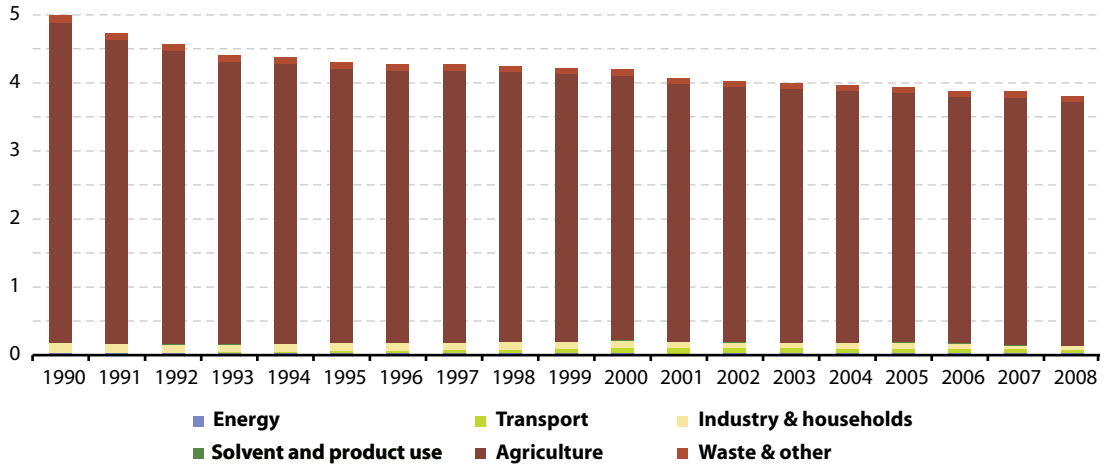
Source: European Environment Agency, Eurostat (online data code: tsdpc280)

Emissions of NH_3 fell at a slower rate than the other three pollutants described above

Of the four pollutants monitored here, emissions of NH_3 declined the least, by 1.2 % per year on average from 4.2 million tonnes in 2000 to 3.8 million tonnes in 2008. Transport and industry had the most pronounced reductions, with emissions falling 4.0 % and 8.5 % per year respectively, but together they only accounted for 3.2 % of total NH_3 emissions in 2008. The vast majority of ammonia emissions come from activities such as manure storage, slurry spreading and the use of synthetic nitrogenous fertilisers in the agricultural sector, accounting for about 95 % of total NH_3 emissions in 2008. The decline of 1.0 % per year between 2000 and 2008 in agricultural NH_3 emissions was primarily due to reduced livestock numbers (especially cattle) ([19]), changes in the handling and management of organic manures and decreased use of nitrogenous fertilisers ([20]).

([18]) European Environment Agency, The European Environment – state and outlook 2010: Air pollution, Publications Office of the European Union, 2010.
([19]) See the indicator 'livestock density index'.
([20]) European Environment Agency, *European Union emission inventory report 1990–2008 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP)*, EEA Technical report No. 7/2010 Publications Office of the European Union, 2010.

Figure 2.17: Emissions of ammonia (NH_3) by source sector, EU-27
(million tonnes)



Change over period 2000-2008:

Average annual growth rate: -1.2 %

Strongest absolute change: Agriculture: -305 tonnes

Strongest relative change: Industry and households: -51.1 %

Source: European Environment Agency, Eurostat (online data code: tsdpc290)

Indicator relevance

Air pollution damages human health and the environment. The pollutants covered here reflect those of the Directive on national emission ceilings ([21]), which set limits on the emissions of four air pollutants contributing to acidification, eutrophication and ground-level ozone ([22]). Effects on human health can range from minor respiratory irritation to cardiovascular diseases and premature death. Adverse impacts on the environment include eutrophication and acidification of ecosystems, damage to ecosystems and crops through exposure to ozone, and damage to materials and cultural heritage (e.g. monuments) due to exposure to acidifying pollutants and ozone. 'Prevent and reduce environmental pollution' is consequently recognised under the 'environmental protection' key objective in the EU Sustainable Development Strategy.

European legislation on atmospheric pollution has applied the twin-track approach of establishing air-quality objectives together with measures to reduce emissions. On the one hand, the EU Air Quality Directive ([23]) establishes ambitious, cost-effective target and limit values for improving human health and environmental quality up to 2020. On the other hand, the Directive on national emission ceilings sets upper limits for each Member State for the total emissions by 2010 of the four pollutants responsible for acidification, eu trophication and ground-level ozone (SO_2, NO_x, NMVOC and NH_3). Internationally, the 1999 Gothenburg Protocol to the United Nations Economic Commission for Europe Convention on Long-Range Transboundary Air Pollution of 1979 also sets emission ceilings for the same four pollutants. In 2005 the European Commission also formulated a thematic strategy on air pollution ([24]), setting objectives for health and environment as well as emission reduction targets for the main pollutants.

Definition

These indicators monitor anthropogenic atmospheric emissions of SO_x, NO_x, NMVOC and NH_3, by source sector.

([21]) Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants.
([22]) For analyses of trends in emissions of, and exposure to, particulate matter, see the chapters on 'public health' and 'sustainable transport'.
([23]) Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
([24]) Commission communication, Thematic Strategy on air pollution, COM(2005) 446.

Number of people in households

During the period from 2005 to 2009 the average number of people per household decreased slightly in the EU, reflecting a trend towards more but smaller households

Commentary

The average number of people per EU household fell from 2.5 in 2005 to 2.4 in 2009

The average number of people per household in the EU fell from 2.5 in 2005 to 2.4 in 2009. This decline in household size reflects the increase in the number of single person households and of single parent households ([25]). Reductions in the number of births and marriages, increases in the average age at which people marry and increases in the number of divorces as well as a general increase in economic prosperity making it affordable to live in smaller households can be seen as the main drivers behind this development.

The number of single person and single parent households is rising

In 2009 the largest group of households in the EU were single adults living without children (29.7 %), followed by couples without children (24.5 %), by couples with children (21.3 %) and by three or more people per household without children (12.9 %). Single adults with children and three or more people with children made up 4.2 % and 6.3 % of all households respectively.

As a result of the decline in household size across the EU, the total number of households increased in all but one Member State (Hungary).

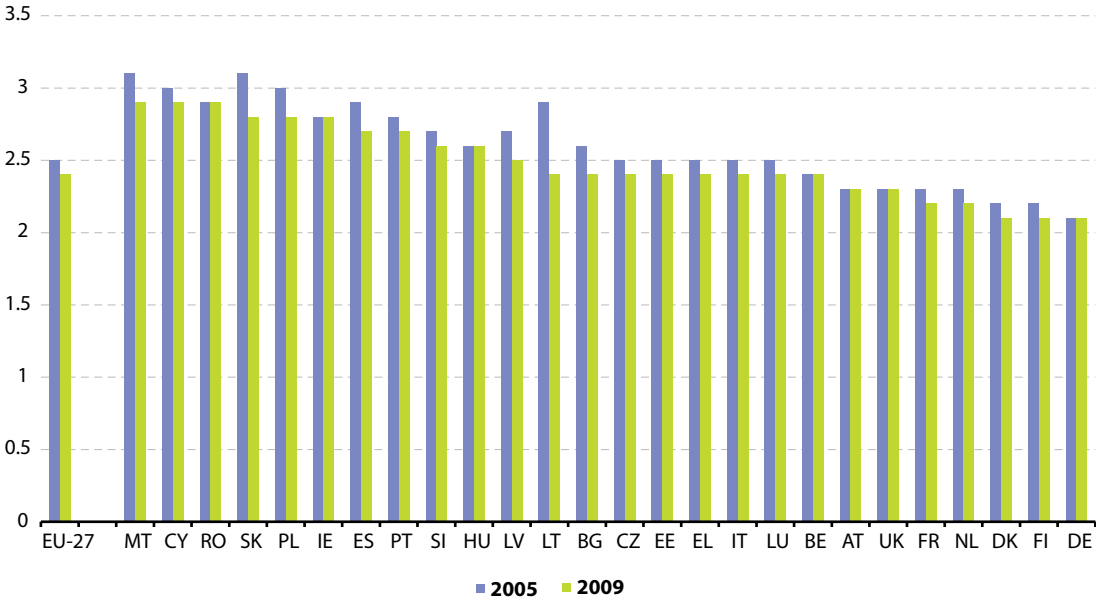
Figure 2.18: Average number of people per household, by country (number of persons)

Key figures in 2009:

Highest: CY, MT, RO: 2.9 people per household

Lowest: DK, DE, FI: 2.1 people per household

EU-27 average: 2.4 people per household



NB: 2006 data for IE; no data for SE.

Source: Eurostat (online data code: tsdpc510)

Indicator relevance

The average number of people per household and the composition of households (whether including couples or single adults, and whether adults are living with or without dependent children) strongly influence households' consumption patterns in all domains, such as land use, transport, waste generation, quantities of goods needed, total energy and water consumption and also the risk of poverty.

([25]) Eurostat. *Environmental statistics and accounts in Europe*, Luxembourg, Publications Office of the European Union, 2010, pp 32ff.

A trend towards more but smaller households tends to be associated with increasing environmental pressures (in absolute and per capita terms), since resources in dwellings (living space, energy for heating, electric and electronic equipment, etc.) will be shared and used by fewer people.

Because the EU Sustainable Development Strategy does not contain an objective referring to the number, size and composition of households in the EU, this indicator is used as a contextual indicator providing background information helpful to an understanding of the indicators from the sub-theme 'consumption patterns'. It is therefore not evaluated, i.e. no weather symbol is shown.

Definition

The indicator is defined as the average number of persons living in 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 jointly occupy the whole or part of a housing unit and provide themselves with food and possibly other essentials for living.

Household expenditure

Between 2000 and 2007 household expenditure in the EU increased continuously, in particular for entertainment and housing and utilities. Due to the economic crisis household saving rates increased sharply, leading to a drop in expenditures from 2007 to 2009

Commentary

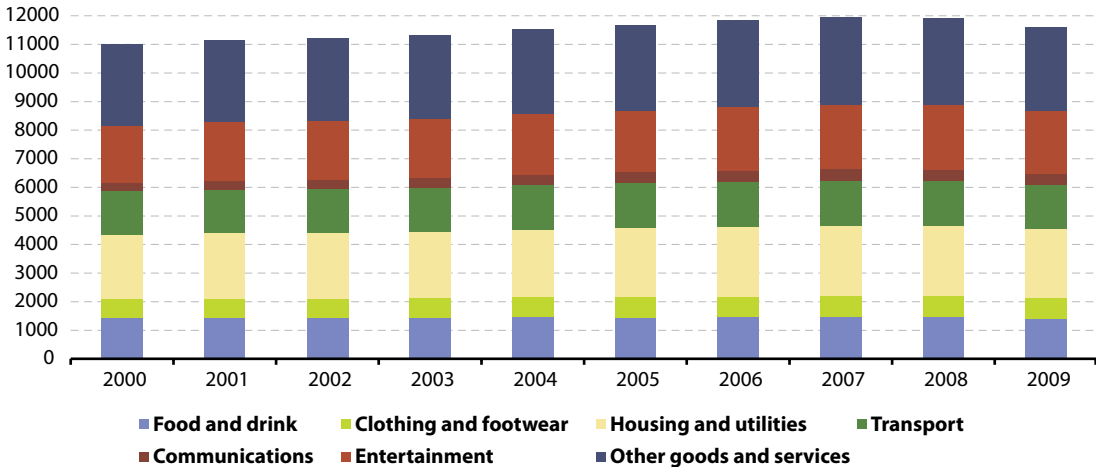
Household expenditure in the EU increased steadily from 2000 to 2007, but dropped in 2008 and 2009 as a reaction to the economic crisis

Per capita household expenditure in the EU rose by 0.6 % per year on average from EUR 11 002 in 2000 to EUR 11 592 in 2009, representing an increase of EUR 66 per inhabitant per year. Of the major items purchased, the biggest increases were in communications (4.4 % per year) and housing and utilities (1.0 % per year). Only the purchase of food and drinks declined between 2000 and 2009 (-0.1% per year).

Because of the economic crisis, household expenditure dropped by 3.1 % (or EUR 368 per inhabitant) between 2007 and 2009. Less expenditure on transport (-5.0 %), other goods and services (-4.3 %), entertainment (-3.9 %) and food and drink (-3.6 %) drove this decline. Expenditure on housing and utilities and on communication continued to increase, but at a lower rate than before the crisis. The decline in household expenditure was accompanied by higher household saving rates, which increased particularly strongly in 2009 ([26]).

Figure 2.19: Final consumption expenditure of households, by consumption purpose, EU-27 (EUR per inhabitant)

Change over period 2000-2009:
Average annual growth rate: +0.6 %
Strongest absolute change: Housing and utilities: + EUR 199
Strongest relative change: Communications: +47 %



Source: Eurostat (online data codes: nama_co2_k, nama_aux_pem)

Indicator relevance

Households play an important role in the final choice about the consumption of goods and services, since according to their allocation of expenses among the various categories, households can increase or decrease their impacts on the environment (this refers for instance to everyday choices such as buying conventional instead of organic food, using private cars instead of public transport, etc.). Although each household, through its individual consumption, has a relatively small environmental impact, collectively, the millions of households in Europe are major contributors to environmental problems such as climate change, air pollution, water pollution, land use and waste generation.

([26]) See the indicator 'household saving rate' in the 'socioeconomic development' chapter.

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. Consumption expenditures provide an indication of the structure of these consumption patterns and the pressure they place on the environment. Since the EU SDS does not include an explicit target for EU household expenditure, it is used here as a contextual indicator providing background information helpful to an understanding of the indicators from the sub-theme 'consumption patterns'.

Definition

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. Expenditures are measured in chain-linked volumes to the reference year 2000 at 2000 exchange rates.

Electricity consumption of households

Between 2000 and 2009 electricity consumption by households increased considerably in the EU

Commentary

Household electricity consumption rose in the EU as well as in most Member States both before and after 2000

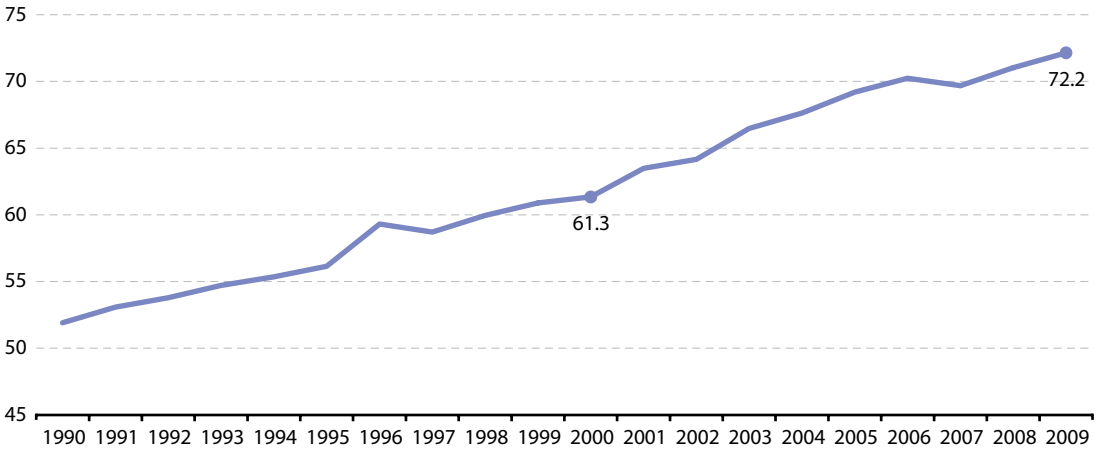
Household electricity consumption in the EU accounted for more than 72 million tonnes of oil equivalent (toe) in 2009. Over the previous decade from 1990 to 2000, consumption rose at an average rate of 2 % per year. This trend continued between 2000 and 2009, at the slightly lower but still significant annual rate of 1.8 %. After a slight fall of 0.8 % in 2007 which was most probably the result of electricity savings during an exceptionally warm winter ([27]), electricity consumption rose again by 1.9 % in 2008 and 1.6 % in 2009.

This growth can be attributed to several factors, including changes in consumption patterns due to declining household sizes and the rising number of households, as well as the so-called 'rebound effect', which occurs when efficiency gains are offset by behavioural changes that increase demand.

The rise in households' electricity consumption between 2000 and 2009 was accompanied by an increase in the share of renewable energy sources in electricity production in almost all Member States ([28]).

Figure 2.20: Electricity consumption of households, EU-27
(million tonnes of oil equivalent)

Period evaluated: 2000-2009
Average annual growth rate: +1.8 %
Relative change: +17.6 %
Absolute change: +10.8 million toe



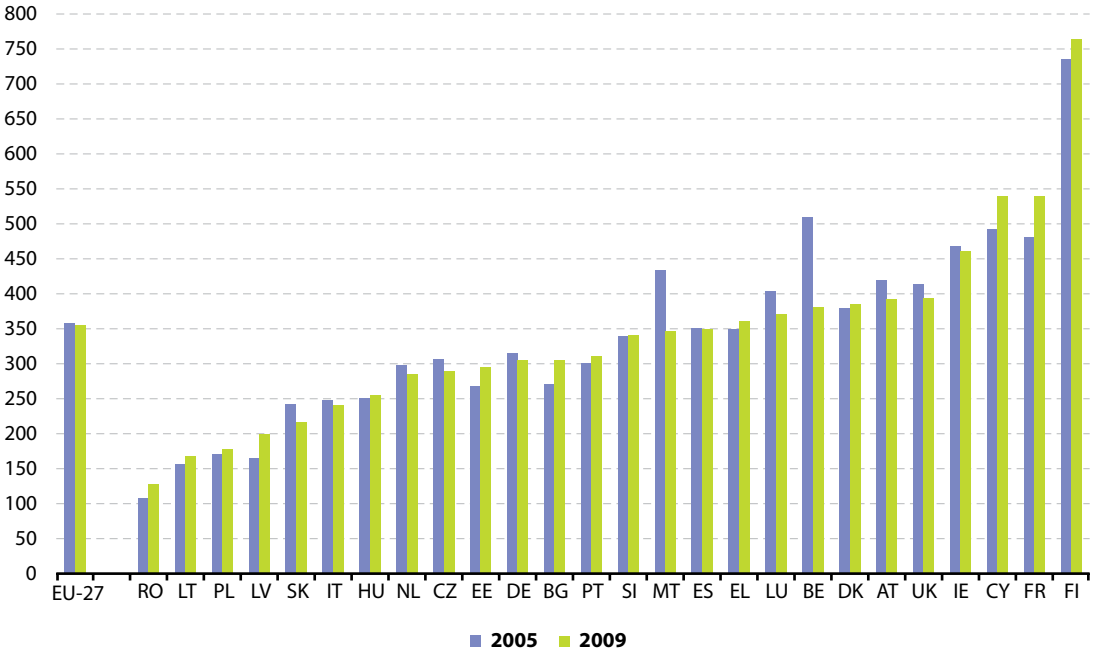
Source: Eurostat (online data code: tsdpc310)

Consumption per household varies by a factor of six in the EU

In 2009 electricity consumption per household ranged from 128 kg of oil equivalents (kgoe) in Romania to 764 kgoe in Finland. This six-fold difference across the EU reflects considerable differences between Member States as regards to the amount of electricity used for heating and cooling due to lifestyles, habits and climate, among other things. Between 2005 and 2009 electricity consumption per household decreased by 0.8 % in the EU but this was more than offset by an increase of 5.1 % in the number of households. It increased most in France, Bulgaria, Romania and Latvia, whereas it fell considerably in Malta and Belgium.

([27]) Luterbacher, J., *et al*, 'Exceptional European warmth of autumn 2006 and winter 2007: Historical context, the underlying dynamics, and its phenological impacts', *Geophys. Res. Lett.*, vol. 34.
([28]) See the indicator 'electricity generated from renewable sources' in the 'climate change and energy' chapter.

Figure 2.21: Electricity consumption per household, by country
(kg of oil equivalent per household)



Key figures in 2009:

Lowest:
Romania: 128 kgoe per household

Highest:
Finland: 764 kgoe per household

EU-27 average:
356 kgoe per household

NB: No data for SE. IE: 2006 data.

Source: Eurostat (online data codes: tsdpc310, lfst_hhnhtych)

Indicator relevance

The use of electricity by households is important to meet basic human needs, such as heating, cooking and lighting. However, energy-intensive consumption patterns, reflected in the growing use of electricity by households, contribute to unsustainable trends in energy use. Household electricity consumption from the use of home appliances (such as washing machines, tumble driers, televisions, personal computers) and for cooking, heating, cooling and lighting can have negative impacts on the environment (depending on the energy mix on the production site ([29]). Therefore, encouraging electricity conservation measures, imposing appliance standards or using taxes or fees to increase the price of environmentally harmful appliances is just as important as encouraging sustainable electricity production.

To this end the EU Sustainable Development Strategy calls for actions aimed at raising awareness among citizens and to help them to change their unsustainable consumption habits, by defining environmental and social performance targets and by providing appropriate labelling of products and services. Besides the reduction of energy consumption within the production process of energy-using products, the directive on eco-design aims to reduce environmental impacts by imposing energy efficiency requirements for products (such as electrical devices or heating equipment) in early stages of product design ([30]).

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 for all electrical appliances.

([29]) See the indicators 'share of renewable energy in gross final energy consumption' and 'electricity generated from renewable sources' in the 'climate change and energy' chapter.
([30]) Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products.

Final energy consumption

Between 2000 and 2009 final energy consumption decreased very moderately. It increased significantly between 2000 and 2004, then changes were limited until 2008 and finally a significant drop occurred in 2009.

Commentary

Final energy consumption in the EU decreased by 5.2 % between 2008 and 2009

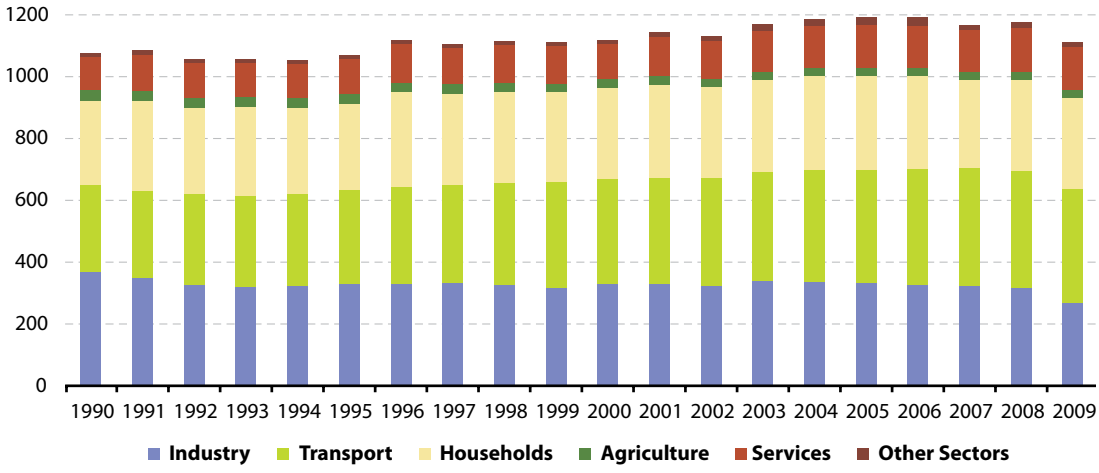
Between 2000 and 2009 final energy consumption decreased very moderately by 0.06 % per year on average from 1 120 to 1 114 million tonnes of oil equivalent (toe). It increased fastest between 2000 and 2004, by 1.2 % per year. This represents an acceleration compared with the previous growth rate of 0.4 % between 1990 and 2000. Final energy consumption stabilised between 2004 and 2006 and even fell by 2.2 % in 2007, most probably due to energy savings during a warm winter ([31]). However, this trend was reversed in 2008, when final energy consumption increased by 0.7 %. Final Energy consumption then decreased significantly by 5.2 % in 2009.

Consumption decreased in 2009 by 14.7 in the industry sectors

Industry and agriculture are the only sectors that have achieved decreases in final energy consumption before and after 2000. Between 2000 and 2009 consumption fell by 1.3 % per year in agriculture and by 2.2 % per year in industry. In contrast, consumption increased most in the category 'other sectors' (3.2 % per year) and in the services sectors (2.2 % per year). Between 1990 and 2007 the energy consumption of transport grew continuously, although the increase between 2000 and 2009 (0.8 % per year) was less pronounced than over the previous decade (1.9 % per year). Because of the economic crisis ([32]), 2009 showed a decline of 2.7 % in transport energy consumption and a decline of 14.7 % in industry energy consumption.

Figure 2.22: Final energy consumption, by sector, EU-27
(million tonnes of oil equivalent)

Period evaluated: 2000-2009
Average annual growth rate: -0.06 %
Strongest absolute change: Industry: -59.9 million toe
Strongest relative change: Services: +22.3 %



Source: Eurostat (online data code: tsdpc320)

Indicator relevance

Energy is essential for economic and social development. However, its production and use, depending on the fuel mix at the power plant, may result in 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 imports for energy supplies. Many environmental impacts stem from energy consumption, including

([31]) Luterbacher, J., *et al*, 'Exceptional European warmth of autumn 2006 and winter 2007: Historical context, the underlying dynamics, and its phenological impacts', *Geophys. Res. Lett.*, vol. 34
([32]) See the indicator 'energy consumption of transport relative to GDP' in the 'sustainable transport' chapter.

air pollution, climate change and biodiversity loss. Therefore reducing consumption through improving energy efficiency (for example technological solutions such as better insulation) and promoting energy saving measures (including behavioural changes in the use of energy such as switching off stand-by modes) is vital for sustainable development.

One of the objectives of the EU Sustainable Development Strategy is 'reaching an overall saving of 9 % of final energy consumption over nine years until 2017' as set in the Directive on energy end-use efficiency and energy services ([33]). Furthermore, the Europe 2020 Strategy includes 'moving towards a 20 % increase in energy efficiency' by 2020 as one of its five headline targets.

Definition

The final energy consumption by sector expresses the sum of energy supplied to the final consumer's door for all energy uses, broken down by consuming sector (transport, industry, households, services, agriculture, other).

([33]) Directive 2006/32/EC on energy end-use efficiency and energy services.

Car ownership

Between 2000 and 2009 the number of passenger cars per 1 000 inhabitants in the EU increased significantly. The highest increases were documented in Eastern Europe and in the Baltic region

Commentary

Car ownership continues to grow but at a slower rate

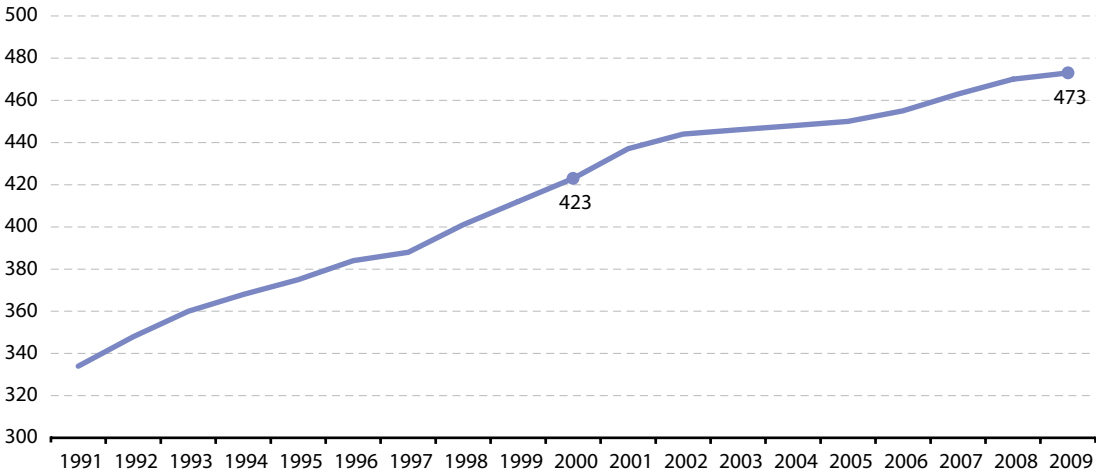
In the EU the number of passenger cars per 1 000 inhabitants grew 1.2 % per year on average from 423 in 2000 to 473 in 2009. In the previous decade, the motorisation rate had increased faster, by 2.7 % per year on average.

In 2009, at country level, the number of passenger cars per 1 000 inhabitants ranged from 197 in Romania to 678 in Luxembourg (data from 2008). There was more than one car for every two inhabitants in Germany, Italy, Cyprus, Lithuania, Luxembourg, Malta, Austria and Finland. Between 2000 and 2009 the motorisation rate increased by more than 50 % in Latvia, Lithuania, Poland and Romania.

Reflecting the economic crisis, growth in passenger cars was more than halved from 2008 to 2009 (from 1.9 % to 0.8 %). This trend is also reflected in the decline in household expenditures for transport ([34]).

Figure 2.23: Motorisation rate, EU-27
(cars per 1 000 inhabitants)

Period evaluated: 2000-2009
Average annual growth rate: +1.2 %
Relative change: +11.8 %
Absolute change: +50 cars per 1 000 inhabitants



NB: 2003-2009 data are estimates.

Source: Eurostat (online data code: tsdpc340)

Indicator relevance

Consumer travel behaviour and dependence on passenger cars influences many aspects of sustainable development. Cars provide access to work, essential services (such as education, health and shops), and cultural, social and leisure activities. But they also produce pollution, noise and waste, use large amounts of energy, cause accidents, and harm human health. These impacts are greater if car occupancy rates are low than if the same journey was made by bus, tram or train, which generally have higher occupancy rates. In addition, increases in transport infrastructure (such as highways, parking lots, etc.) lead to land sealing and ecosystem fragmentation ([35]).

([34]) See the indicator 'household expenditure'.
([35]) See the indicator 'increase in built-up land' in the 'natural resources' chapter.

Nevertheless, it should be remembered that the motorisation rate only measures car ownership and that it is the use of cars that is the main cause of environmental damage. Furthermore, this indicator makes no distinction between the types of vehicles, e.g. cars with 'green technologies'. For more information on transport impacts, see the indicators in the 'sustainable transport' chapter.

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 carrying passengers and designed to seat no more than nine persons (including the driver). The term 'passenger car' therefore covers micro-cars (which need no permit to be driven), taxis and hired passenger cars, provided they have fewer than ten seats; this category may also include pick-ups.

Environmental management systems

Between 2003 and 2010, the number of organisations in the EU certified according to the Eco-Management and Audit Scheme increased substantially, mainly due to high growth rates in Southern European countries

Commentary

In 2010, more than 80 % of the EMAS registered organisations were recorded in Germany, Spain and Italy

The number of organisations having an environmental management system according to the 'Eco-Management and Audit Scheme' (EMAS) regulation has grown substantially since it was introduced in 1995. Registrations in the EU increased by 5.7 % per year from 3 068 organisations in 2003 to 4 521 in 2010.

In 2010, more than 80 % of the EMAS-registered organisations were recorded in three Member States (31 % in Germany, 27 % in Spain and 23 % in Italy). Although the number of registered organisations in the 12 most recent EU Member States is steadily increasing, most of the registered organisations are still located in the 15 oldest EU Member States (98 % of the total number of registrations).

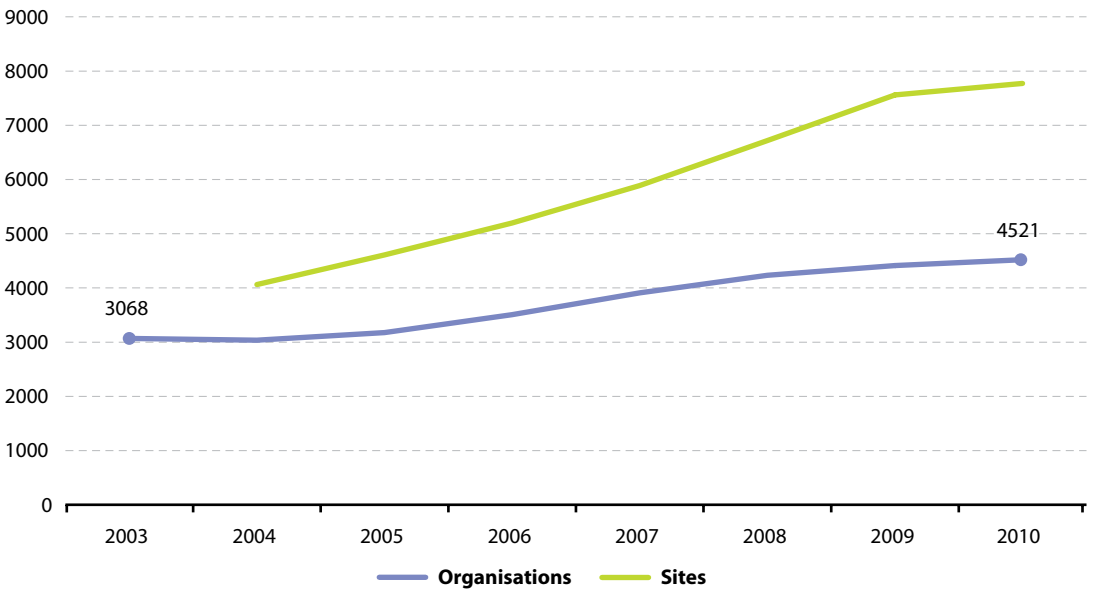
Since 2004, the number of organisations and sites with EMAS registrations in the EU increased steadily

Since 2004 corporate registrations are possible and organisations can register all their sites under one registration number. In order to give a more accurate picture of EMAS development, the European Commission consequently started to collect information on the number of sites in 2004; this resulted in a documentation of a total of 7 773 sites certified according to EMAS in 2010.

While EMAS and ISO 14001 (Environmental Management Systems) share the same objective, EMAS goes beyond several ISO requirements ([36]). A comparison with statistics on ISO 14001 reveals that the popularity of EMAS is still relatively low: ISO reports a total of 89 237 certifications in Europe in 2009, with Spain, Italy, United Kingdom, Romania, Germany and Czech Republic in the top ten world-wide ([37]).

Figure 2.24: Organisations and sites with EMAS registration (number)

Period evaluated: 2003-2010 (organisations)
Average annual growth rate: +5.7 %
Relative change: +47.4 %
Absolute change: +1 453 organisations



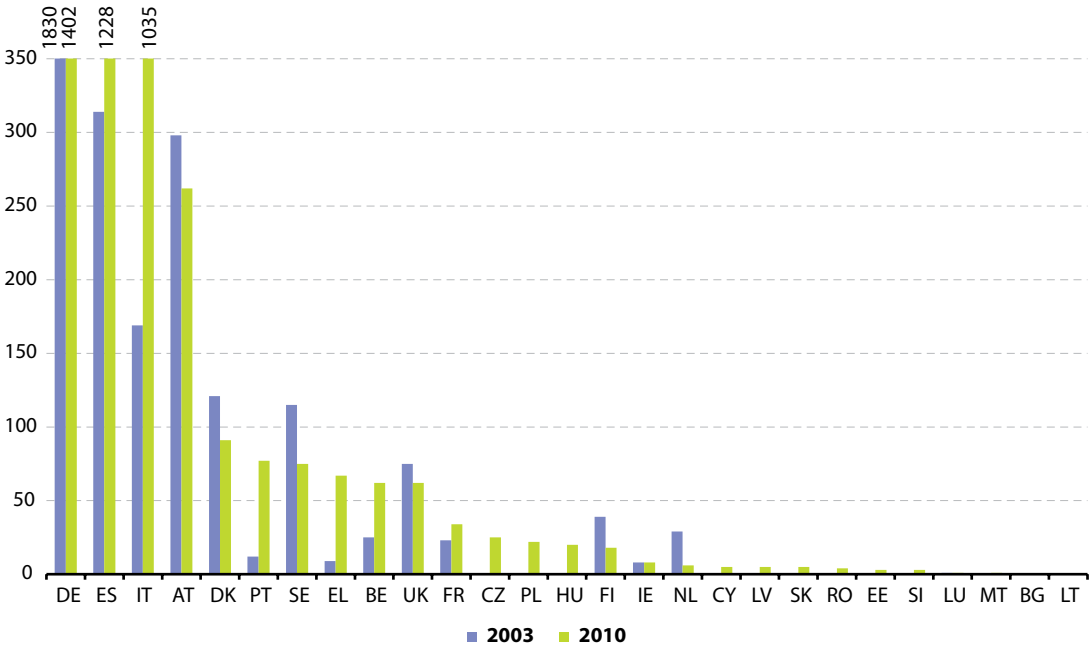
Source: European Commission, Directorate-General for Environment, Eurostat (online data code: tsdpc410)

([36]) EMAS Factsheet – EMAS and ISO/EN ISO 14001: differences and complementarities.
([37]) International Standards Organisation, *The ISO Survey of Certifications 2009*.

The picture at the Member State level is quite diverse. The Member States which have a long-standing EMAS tradition such as Germany, Sweden, Austria and Denmark experienced a decline in the number of registrations from 2003 to 2010. This can be partly explained by the fact that demonstrating continuously improving environmental performance (as is required be the EMAS scheme) is difficult to achieve for organisations that have already been implementing EMAS for some time as compared to companies just entering the scheme ([38]). The decline of EMAS-registered organisations in these countries was offset mainly by the growth in Southern European countries such as Greece, Portugal, Italy and Spain. These countries multiplied their numbers of EMAS-registered organisations by a factor ranging between three (Spain) and six (Greece).

Growth in EMAS registrations was strongest in Southern European countries

Figure 2.25: Organisations with EMAS registration, by country (number)



Change over period 2003-2010:

Total number of organisations in the EU: +47.4 %

Strongest absolute change: Spain: +914 organisations

Strongest relative change: Greece: +644 % growth

Source: European Commission, Directorate-General for Environment, Eurostat (online data code: tsdpc410)

Indicator relevance

EMAS is an important instrument for addressing the ecological dimension of corporate social responsibility. Its aim is to help improve the environmental performance (such as energy and resource efficiency) of European companies on the process level. In 2009 the EMAS regulation was revised in order to improve its applicability to small organisations and to ease the administrative and financial burdens on organisations with sites in more than one Member State ([39]).

According to the EU Sustainable Development Strategy, businesses are encouraged to take a pro-active approach to include corporate social and environmental responsibility in their operations within the EU and elsewhere. It calls for businesses and social partners to be involved 'to foster cooperation and common responsibilities to achieve sustainable consumption and production'.

([38]) Milieu Ltd and Risk and Policy Analysis Ltd, *Final Report – Study of the Costs and Benefits to EMAS to Registered Organisations*, 2009.
([39]) Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

Definition

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.

Ecolabels

Between 2000 and 2010 the number of ecolabel licenses in the EU was multiplied by a factor of more than 20

Commentary

The EU Ecolabel, or 'EU flower', is a voluntary label informing consumers that products and services meet certain environmental criteria over their entire life-cycle ([40]). Between 2000 and 2010 the number of licences increased by 36.1 % per year on average, i.e. a multiplication by a factor of 21.8 over this period.

Since 2000 EU ecolabel licences have increased by 36 % per year

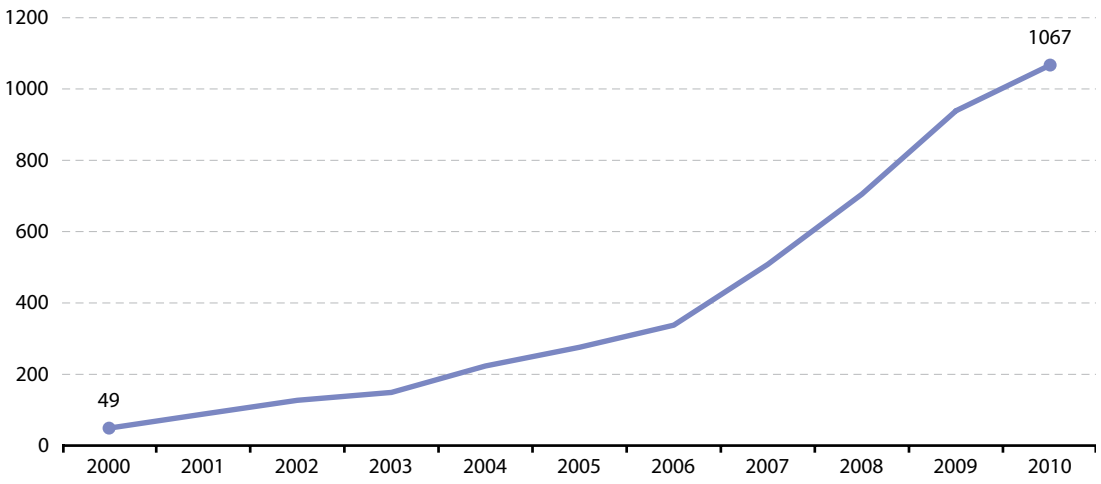
In October 2010 tourist accommodations and campsite services represented 37 % of the total certifications. They were followed by cleaning products (11 %), with textile products and indoor and outdoor paints and varnish each representing 9%. At the country level, Italy had the most ecolabel holders with 31 % of the EU total, followed by France with 21 %. A possible explanation of this rather high share in these two countries (which together hold more than half of the EU's ecolabel licenses) is the non-existence of competing national labelling schemes. At the end of 2010, Bulgaria, Latvia, Luxembourg and Slovakia were the only countries without registered ecolabels.

In 2010 more than half of the ecolabel licenses were held by Italy and France

However, despite the significant increase in ecolabel licenses, the EU market share of ecolabelled products remains rather low ([41]). In addition, according to a Eurobarometer survey from 2009, 61% of EU citizens admitted never having seen - or heard about - the EU eco-label and its flower logo ([42]). The ecolabel scheme was revised in 2010 in order to introduce more product groups, a quicker criteria development process and simplification of the assessment procedure ([43]).

Ecolabelled products still have a very small EU market share

Figure 2.26: Ecolabel licences, EU-27
(number)



Period evaluated: 2000-2010
Average annual growth rate: +36.1 %
Relative change: +2 078 %
Absolute change: +1 018 licenses

Source: European Commission, Directorate-General for Environment - Eco-label Help desk, Eurostat (online data code: tsdpc420)

Indicator relevance

The indicator tracks the adoption of the EU ecolabel, which, along with environmental management schemes (see previous indicator), is an important tool in terms of corporate social responsibility

([40]) Commission communication, *On the sustainable consumption and production and sustainable industrial policy action plan*, COM(2008) 397.
([41]) 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.
([42]) European Commission, *Europeans' attitudes towards the issue of sustainable consumption and production*, Flash EB No 256, 2009
([43]) Regulation (EC) No 66/2010 on the EU Ecolabel.

because it has the potential of influencing both producers and consumers and thus contributing to sustainable development. By informing consumers about the impact of their consumption choices and behaviour, the ecolabel enhances demand for and use of more environmentally sound products. This in turn encourages companies to develop products and services with lower environmental impacts. The EU flower already extends to 26 product groups covering twelve major areas of manufacturing and one service activity.

Many Member States have developed effective ecolabelling schemes such as the German Blue Angel or the Nordic Swan schemes, all of which operate alongside the EU scheme. 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'.

Definition

This indicator measures the number of Ecolabel licences in European countries. The EU Ecolabel is awarded to products and services with reduced environmental impacts.

Area under agri-environmental commitment

In 2009, almost one-quarter of the EU's total utilised agricultural area was enrolled in agri-environmental measures

Commentary

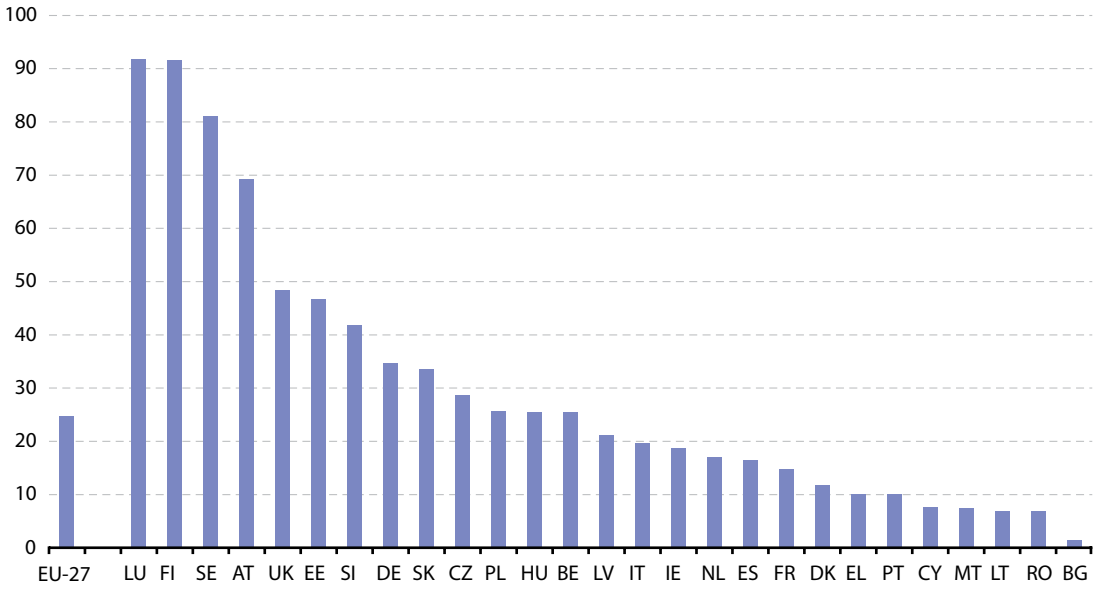
This indicator is calculated as the ratio between the surface of area under agri-environmental commitment and the total utilised agriculture area (UAA).

In 2009, more than two-thirds of area in agri-environmental commitment in four countries

In EU-27, 24.7 % of the UAA were in 2009 under agri-environmental commitment.

A group of four countries (LU, FI, SE and AT) was far ahead of the others. In these countries, more than two third of their UAA were under agri-environmental commitment (between 69.2 % and 91.7 %). In 6 EU countries, the ratio was below 10% (BG, RO, LT, MT, CY, PT).

Figure 2.27: Area under agri-environmental commitment, by country
(% of total utilised agricultural area)



Key figures in 2009:
Highest:
Luxembourg: 91.7 %
Lowest:
Bulgaria: 1.3 %
EU-27 average:
24.7 %

NB: 2007 data used for the denominator of the ratio (total utilised agricultural area).

Source: European Commission, Directorate-General for Agriculture and Rural Development, Eurostat (online data code: tsdpc430)

Indicator relevance

Since the 1999 CAP reform, agri-environment is the only obligatory measure that Member States must include in their rural development programmes. It is seen as a key measure for environmental policy integration. Participation by farmers or other land managers in agri-environment schemes is voluntary. Support is granted to farmers who commit themselves for a period of at least five years to use agricultural production methods designed to protect the environment or maintain landscape features which go beyond a reference baseline including *inter alia* cross-compliance. This baseline aims to minimise some of the potential negative environmental effects of the agricultural activity and to ensure that agri-environmental measures deliver more environmental benefits. In return for their commitment, farmers receive financial assistance that compensates for additional costs and loss of income that occurs as a result of altered farm management practices.

Agri-environment is currently one of the two main instruments (together with cross-compliance) for the integration of environmental goals into the CAP. The indicator thus contributes to measure

the relative degree of policy priority that is given, at national and regional level, to different agri-environmental issues of concern. They are also a key tool for achieving environmental objectives, such as those set out in the former EU biodiversity action plan for agriculture ([44]), in the new EU biodiversity strategy for 2020 ([45]), in the nitrates directive ([46]), under the Kyoto Protocol or other environmental policies targeting agriculture. The renewed Sustainable Development Strategy calls for Member States and the Commission to 'make further efforts through the new programmes for rural development'.

Definition

This indicator monitors trends in agricultural land enrolled in agri-environmental measures as the share of total utilised agricultural area (UAA). The data include agri-environmental contracts signed in 2007-2009 under Regulation (EC) 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).

([44]) Commission communication, Biodiversity action plan for agriculture, COM(2001) 162.
([45]) Commission communication, Our life insurance, our natural capital: An EU biodiversity strategy to 2020, COM(2011) 244.
([46]) Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources.

Organic farming

Between 2005 and 2009 the share of agricultural area occupied by organic farming in the EU increased considerably

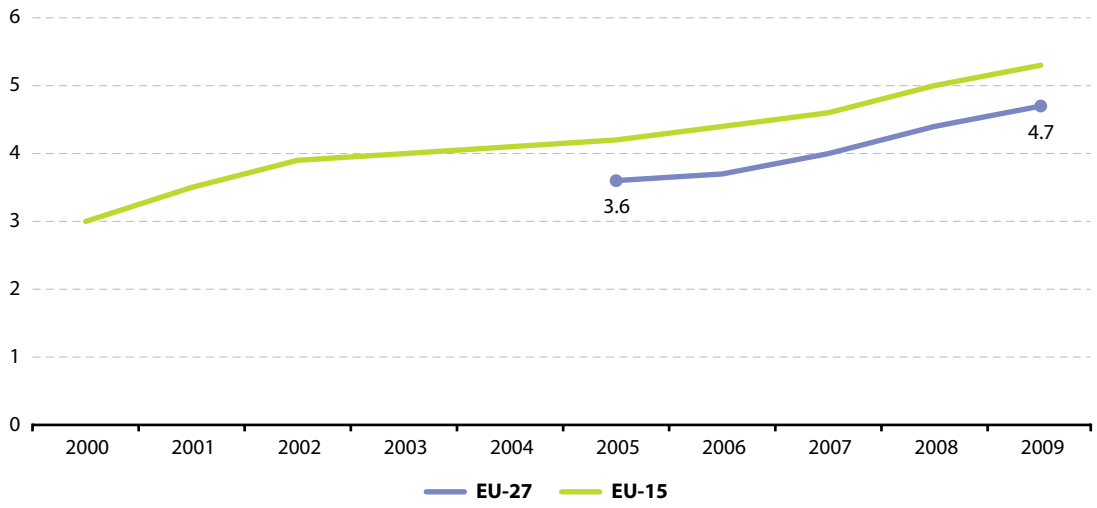
Commentary

The share of organic farming in utilised agricultural area (UAA) in the EU increased from 3.6 % to 4.7 % between 2005 and 2009. This increase is also reflected in the number of organic producers in the EU, which rose by 9.5 % between 2007 and 2008 ([47]).

Organic farming in the EU increased by almost one third between 2005 and 2009

At the level of Member States, the largest increases between 2005 and 2009 were in Malta (400 %), Poland (130 %), Spain (126 %) and Lithuania (109 %). Austria still held the largest share of organic farming in utilised agricultural area, with 18.5 % in 2009, followed by Sweden (12.8 %), Estonia (11 %) and the Czech Republic (10.6 %). The smallest share of organic farming could be found in 2009 in Bulgaria (0.2 %) and Malta (0.5 %). Overall, the organic farming sector grew during this period in all Member States, with the exception of Portugal, Bulgaria and France.

Figure 2.28: Area under organic farming
(% of utilised agricultural area)



Period evaluated: 2005-2009 (EU-27)
Average annual growth rate: +6.9 %
Relative change: +30.6 %
Absolute change: +1.1 percentage points

NB: Eurostat estimates.

Source: Eurostat (online data code: tsdpc440)

Indicator relevance

The concerns of consumers about the environment, animal welfare and health-related issues, such as pesticides and additives to food and animal feed, have increased demand for organic products over the years. Organic farming practices are intended to minimise the negative impacts on the environment by avoiding the use of chemical pesticides, drugs, antibiotics and petroleum-based fertilisers, by prohibiting the use of genetically modified organisms, and by concentrating on the health of soil, water, crops and biodiversity, as well as the well-being of animals.

In 2004 the Commission published an overall strategic vision for organic farming's contribution to the CAP ([48]). The EU Sustainable Development Strategy encourages Member States to 'support information campaigns with retailers and other organisations to promote sustainable products, such as products

([47]) Rohner-Thielen, E., Eurostat, *Area under organic farming increased by 7.4% between 2007 and 2008 in the EU-27*, Statistics in Focus 10/2010, Luxembourg, 2010
([48]) Commission communication, *European Action Plan for Organic Food and Farming*, COM(2004) 415.

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). 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 ([49]).

([49]) Regulation (EC) No 834/2007 on organic production and labelling of organic products.

Livestock density index

Between 2003 and 2007 the number of livestock units per hectare of utilised agricultural area decreased considerably in the EU

Commentary

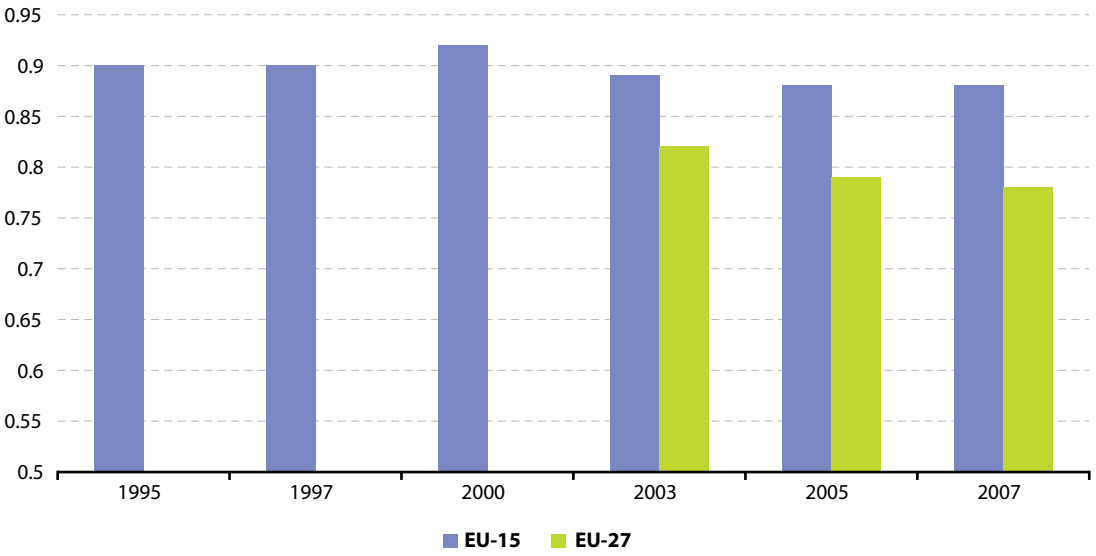
Since 2003, in the EU, the number of livestock units (LSU) per hectare of utilised agricultural area (UAA) has fallen by 1.2 % per year on average (from 0.82 to 0.78 LSU). The EU-15 figures decreased from 0.92 to 0.88 between 2000 and 2007, representing an average decline of 0.6 % per year. Thus, the pre-2000 increase of 0.4 % per year between 1995 and 2000 was reversed.

The number of livestock units per hectare decreased in the EU-15 after a peak in 2000

The EU 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 abandoned areas and hot spots. Moreover, 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.

Large differences between Member States and regions exist

Figure 2.29: Livestock density index
(livestock units per hectare)



Period evaluated: 2003-2007 (EU-27)
Average annual growth rate: -1.2 %
Relative change: -4.9 %
Absolute change: -0.04 LSU

Source: Eurostat (online data code: tsdpc450)

Indicator relevance

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, a process that has characterised European agriculture for several decades. While intensification increases yields and input efficiency, it can nevertheless harm the environment if not well managed. Intensive livestock rearing, especially in pig and poultry production, is a main source of farmyard manure and slurry, which can lead to nutrient surpluses that harm aquatic systems.

Definition

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 allows livestock from various species and ages to be added together. The 'Eurofarm LSU coefficients', which are the basis 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 to the 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).

Non-mineral waste

Non-mineral waste includes hazardous and non-hazardous waste from all economic sectors and from households, including waste from waste treatment (secondary waste) but excluding mineral waste.

The indicator is based on generation data compiled according to Annex I of the Waste Statistics Regulation ([50]) and according to aggregates of the material-oriented statistical waste nomenclature EWC-Stat in Annex III of the Waste Statistics Regulation.

([50]) Regulation 2150/2002/EC on waste statistics.

The indicator covers all wastes except the following waste categories:

- Mineral wastes (EWC-Stat 12.1 – 12.3, 12.5)
- Contaminated soils and polluted dredging spoils (EWC-Stat 12.6)
- Dredging spoils (EWC-Stat 11.3)

Although completely or partly mineral, the indicator explicitly includes combustion wastes (EWC-Stat 12.4) and solidified, stabilised and vitrified wastes (EWC-Stat 13).

Hazardous waste

Hazardous waste from all economic sectors and from households, including waste from waste treatment (secondary waste) is included.

The indicator is based on generation data compiled according to Annex I of the Waste Statistics Regulation ([51]) and according to aggregates of the material-oriented statistical waste nomenclature EWC-Stat in Annex III of the Waste Statistics Regulation.

The indicator covers all waste that is classified as hazardous according to the definition of the Waste Framework Directive ([52]), i.e. all waste types that are included in the European List of Wastes ([53]) and marked with an asterisk. Accordingly, radioactive waste is excluded.

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. The reported quantities of waste generated and treated do not match exactly for some Member States, for the following reasons: estimates for the population not covered by collection schemes, weight losses due to dehydration, double counts of waste undergoing two or more treatment steps, exports and imports of waste and time lags between generation and treatment (temporary storage).

Atmospheric emissions

This dataset contains the emissions data used in the European Union's annual submission to the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution. (LRTAP) The dataset is based on the official country reports provided to the LRTAP Convention and to European Environment Agency. Where gaps exist in the LRTAP data due to non-reporting, in the first instance other officially-reported emissions data are used to fill these. A simple interpolation/extrapolation process is finally used to fill remaining gaps to provide a consistent set of data suitable for assessment purposes.

Number of people in households

The data are derived from the European Labour Force Survey (LFS), 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.

([51]) Regulation 2150/2002/EC on waste statistics..
([52]) Directive 2008/98/EC on waste and repealing certain Directives.
([53]) Decision 2000/532/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste.

Household expenditure

Annual information on household final consumption expenditure by purpose is available from national accounts'. The legal basis is the ESA95, however, depending on the set up of the statistical systems in the Member States there might be national differences for instance in sources used. 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
Communication	CP08 Communications
Other goods and services	CP02 Alcoholic beverages, tobacco and narcotics; CP05 Furnishings, household equipment and routine maintenance of the house; CP06 Health; 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.

Car ownership

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.

Ecolabels

The data are provided by the European Commission eco-label helpdesk, managed by the Directorate-General for the Environment. The Community ecolabel 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).

Area under agri-environmental commitment

The data on area under agri-environmental commitments come from the common indicators of the monitoring and evaluation framework of the rural development programme, which were provided by Member States to the Directorate-General for Agriculture and Rural Development in 2009. The reference legal framework for 2007-2013 is Regulation (EC) No 1698/2005 on support for rural development by the EAFRD. The monitoring tables of Rural Development Programmes reported by Member States record individual agri-environmental agreements and the area covered by them. Data on total utilised agricultural area are extracted from the farm structure survey.

Organic farming

The data on organic farming area are administrative data collected annually by the national control bodies using the harmonised questionnaire of Eurostat. The indicator shows the evolution in the share of the organic farming area (where possible divided into fully converted and in-conversion area) in the total utilised agricultural area (UAA) in the Member States. The UAA data are based on the annual crop statistics (land use).

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.

Social inclusion

3

'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' (overall objective of the EU Sustainable Development Strategy for the key challenge 'social inclusion, demography and migration')

Overview of main changes

The trends observed in the social inclusion theme since 2000 are in general rather encouraging, especially in terms of reducing poverty. There has been a clearly favourable development in the overall risk of poverty or social exclusion. This is reflected in particular in the number of people at risk of severe material deprivation and the number of people living in households with very low work intensity. There has also been a clearly favourable development in reducing the number of adults with low educational attainment and the difference between men's and women's wages (gender pay gap). Furthermore, there has been a moderately favourable development in the risk of monetary poverty, the intensity of poverty, income inequalities and long-term unemployment. However, there have also been several unfavourable developments. The share of working poor has risen, participation in life-long learning has declined, missing the target set for 2010, and further progress is necessary in reducing the share of early school leavers and low reading literacy of pupils.

Table 3.1: Evaluation of changes in the social inclusion theme *(EU-27, from 2000)* (1)

Level 1	Level 2	Level 3
	Monetary poverty and living conditions	
	Risk of poverty after social transfers (*)	Intensity of poverty (*)
	Severe material deprivation (*)	Income inequalities (*)
	Access to labour market	
Risk of poverty or social exclusion (*)	Households with very low work intensity (*)	Working poor (*)
		Long-term unemployment
		Gender pay gap (**)
	Education	
	Early school leavers (***)	Adults with low educational attainment
		Lifelong learning (***)
		Low reading literacy performance of pupils

(*) From 2005. (**) From 2006. (***) From 2003.

(1) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

Between 2008 and 2009 about 2 million people less at risk of poverty or social exclusion

About 2 million people were lifted out of the risk of poverty or social exclusion between 2008 and 2009. This was mainly achieved through reducing the number of people suffering from severe material deprivation.

Monetary poverty and living conditions

Slight decrease in share of people at risk of monetary poverty, and less material deprivation

The share of people at risk of poverty after social transfers has only slightly decreased since 2005, but the number of people suffering from severe material deprivation has decreased substantially, and most Member States are in line with this favourable trend. The gap between the income of the poor and the poverty threshold (poverty intensity) has been slightly reduced, and income inequality has marginally decreased.

Access to labour market

Slightly less long-term unemployment, but more working poor

Between 2005 and 2009 the share of people living in households with very low work intensity fell in the EU as a whole and in most Member States. While the share of long-term unemployment has fallen very slightly since 2000, the share of people at risk of poverty despite being employed (working poor) increased between 2005 and 2009. The difference between male and female wages fell significantly between 2006 and 2009, but not in all Member States.

Education

Several favourable trends but the 2010 target for life-long learning was missed

The share of early school leavers declined in the EU, but further progress is still necessary to reach the 2020 target. Since 2003 there has been progress in the participation in life-long learning as well, but the 2010 target was not reached. The share of adults with low educational attainment steadily declined, and the previously worsening trend in low reading literacy performance among pupils was reversed in 2009 although it will be insufficient to meet the target in 2010.

Social inclusion and sustainable development

Fighting social exclusion is a major challenge for sustainable development

'Development involves a progressive transformation of economy and society. … Sustainability cannot be secured unless development policies pay attention to such considerations as changes in access to resources and in the distribution of costs and benefits' ([2]). Fighting poverty and social exclusion are therefore important for societies to develop in a socially and economically sustainable way. Social inclusion is about reducing monetary poverty, ensuring access to labour markets and improving education. Each of these aspirations has mutually reinforcing positive effects on sustainable development. Hence, the Europe 2020 Strategy sets socially inclusive growth as one of three priorities for Europe's development after the economic crisis.

Monetary poverty is an obstacle to participation in society and its side effects cause high costs

Reducing poverty helps people participate fully in society. Economic inequality and material deprivation lead to diverging living conditions for societal subgroups, which can hinder full integration of the least well-off into society. Reducing poverty will also enhance children's chances of doing well at school, because good education can be a matter of (parental) income ([3]). Monetary poverty is also an economic burden for society, not only because of social transfers, but also through costly side effects such as reduced health and rising crime. More effective and efficient social inclusion policies will help to contain public spending ([4]). Reducing poverty can thus help free society's resources for addressing other long-term challenges such as ageing, climate change, ensuring environmentally sustainable growth or global partnerships.

Access to labour market is important for participation in society and economic development

Access to the labour market is important to sustainable development because it reduces the risk of poverty or social exclusion. The more people that participate in the labour market, the less dependent they will be on social transfers. High dependency reduces people's self-esteem and ability to participate in society, and the welfare burden threatens long-term economic growth. Unemployment and non-participation in the labour market due to disincentives, such as the gender pay gap, prevent full realisation of human capital and are a social and economic loss to society.

Better education reduces risk of poverty, eases participation in the labour market and is key to economic growth

Education aids sustainable development because it is needed to gain access to labour markets and to reduce the risk of poverty. This is increasingly the case in today's knowledge society. Better education also increases worker productivity and innovation, thus strengthening the EU's economic growth potential. A well performing economy fosters employment, reduces monetary poverty, strengthens social inclusion and leaves more resources for research and education, creating a virtuous cycle. Hence, economic growth is important to assure economic sustainability and free the resources needed to pursue social and environmental sustainability. Better education also improves people's social interactions and enhances quality of life.

([2]) Report of the World Commission on Environment and Development to the General Assembly of the United Nations, *Our Common Future*,1987.
([3]) Mincer, J. A., *Schooling, experience, and earnings,* New York, National Bureau of Economic Research, 1974.
([4]) See *Joint Report on Social Protection and Social Inclusion 2010* in 'Further reading'.

Box 3.1: Objectives related to social inclusion in the EU Sustainable Development Strategy

The key objective of the EU Sustainable Development Strategy in the field of social equity and cohesion is to promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity, in order to create equal opportunities and to combat discrimination in all its forms.

Operational objectives and targets ([5]):

- Pursuing the EU objective that steps have to be taken to make a decisive impact on the reduction of the number of persons at risk of poverty and social exclusion by 2010 ([6]), 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.
- Promoting increased employment of young persons. Intensifying efforts to reduce early school leaving to 10 % ([7]) 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.

Further reading on social inclusion

Commission communication, *New Skills for New Jobs: Anticipating and matching labour market and skills needs*, COM(2008) 868

European Commission, *The Social Situation in the European Union 2009*, Luxembourg, Publications Office of the European Union, 2010

European Council and European Commission, *Joint Report on Social Protection and Social Inclusion 2010*, 6500/10

Eurostat, *Combating Poverty and Social Exclusion: A Statistical Portrait of the European Union 2010*, Luxembourg, Publications Office of the European Union, 2010

National Strategy Reports on Social Protection and Social Inclusion 2008-2010

United Nations, *Analysing and Measuring Social Inclusion in a Global Context*, New York, United Nations publication, 2010

([5]) The targets of the EU SDS refer to the year 2010. However, data for this report are only available until 2009, so 2010 targets are still relevant even if new targets have been defined in the Europe 2020 Strategy.
([6]) New targets have been set in the Europe 2020 Strategy.
([7]) The same target has been set in the Europe 2020 Strategy for the year 2020.

Risk of poverty or social exclusion

About 2 million people were lifted out of the risk of poverty or social exclusion between 2008 and 2009. This was mainly achieved through reducing the number of people suffering from severe material deprivation.

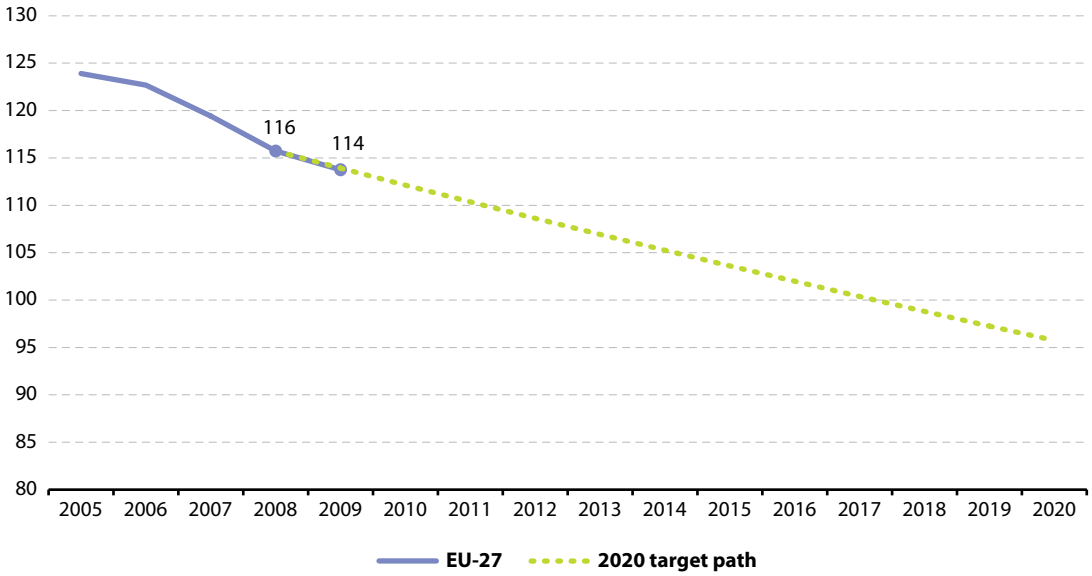
Commentary

Between 2008 and 2009 about 2 million people less at risk of poverty or social exclusion

The number of people at risk of poverty or social exclusion is the headline indicator for the social inclusion dimension of the Europe 2020 Strategy, which has set the target of lifting at least 20 million people out of poverty and social exclusion by 2020. The 'at risk of poverty or social exclusion' indicator is based on three dimensions of poverty: relative monetary poverty, material deprivation and lack of access to the labour market ([8]).

In 2009, 114 million persons or 23.1 % of the EU population were at risk of poverty or social exclusion, compared with 116 million in 2008. This reduction continues the trend of the previous four years during which the number of people at risk of poverty or social exclusion decreased on average by approximately 2 million per year. Although this decrease appears encouraging in terms of the possibility of achieving the 2020 target, it is not clear that the trend can be sustained. In particular, the decrease between 2005 and 2009 has been driven mainly by a reduction in the numbers suffering from severe material deprivation, which is not the dominant component of the multidimensional indicator. It is uncertain whether the reduction in material deprivation can continue at the same pace over the coming years or whether there can be a sharper decrease in the number of people at risk of poverty after social transfers. The economic and financial crisis may also introduce a lag effect that has not yet influenced the development of the indicator.

Figure 3.1: People at-risk-of-poverty or social exclusion, EU-27
(million persons)



Period evaluated: 2008-2009
Distance to target path in 2009: - 162 000 persons
Annual growth rate: -1.7 %
Absolute change: - 1 980 000 persons

NB: 2005 and 2006 data are Eurostat estimates. The target value used for the evaluation of this indicator is based on available 2008 data. However, at this point in time it is not possible to definitively quantify the target for 2020, and it should be regarded as provisional.

Source: Eurostat (online data code: tsdsc100)

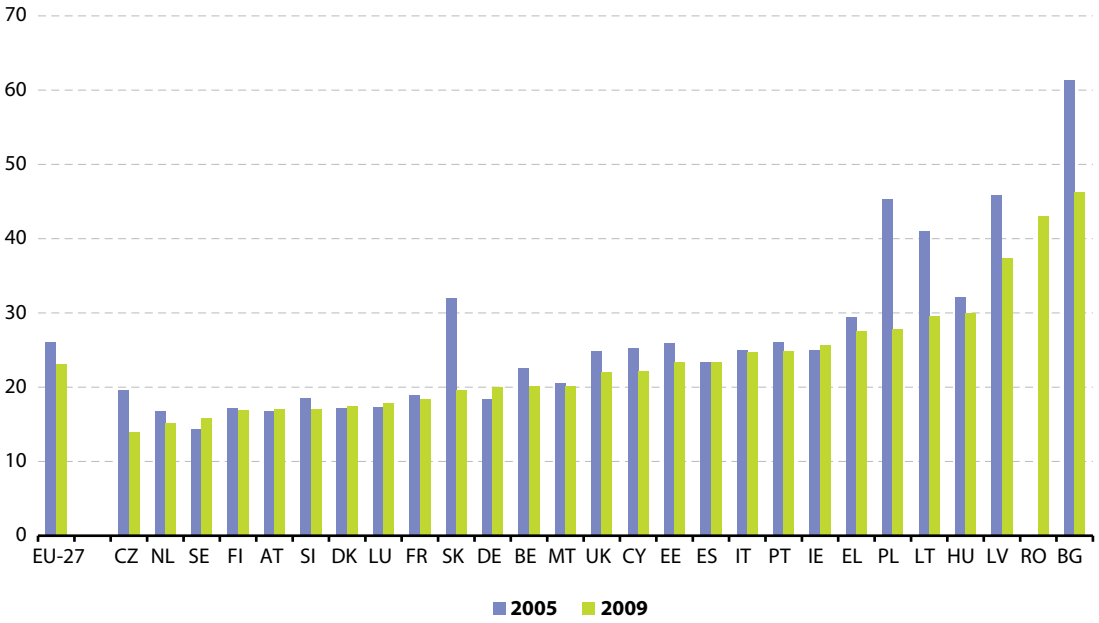
Between 2005 and 2009 the number of people at risk was reduced in the majority of Member States

Between 2005 and 2009 the share of people at risk of poverty or social exclusion declined in the majority of Member States. However, it rose in seven countries and remained constant in three others. Notably, the countries showing the highest risk of poverty or social exclusion in 2005 had the strongest reductions until 2009. Thus, differences between Member States have reduced slightly.

([8]) The three dimensions ('sub-indicators') are presented individually in this report; see the indicators on 'Risk of poverty after social transfers', 'Severe material deprivation' and 'Households with very low work intensity'.

Figure 3.2: People at-risk-of-poverty or social exclusion, by country
(% of population)

Key figures in 2009:
Highest:
Bulgaria: 46.2 %
Lowest:
Czech Republic: 14 %
EU-27 average:
23.1 %



NB: EU-27 data for 2005 are Eurostat estimates; 2006 data used for BG.

Source: Eurostat (online data code: tsdsc100)

Indicator relevance

Measuring poverty and social exclusion is difficult because it is a multidimensional concept. As household income is generally considered a key determinant of standard of living, the at-risk-of-poverty after social transfers indicator is a meaningful measure of poverty. However, other relevant barriers to full participation in society, such as access to the labour market and material deprivation, also need to be considered. The complex nature of social exclusion is one reason why the European Commission has adopted the broader 'at risk-of-poverty-or-social-exclusion rate' indicator in its Europe 2020 Strategy.

The at-risk-of-poverty-or-social-exclusion indicator is an aggregate of three sub-indicators important to the Europe 2020 Strategy: people at-risk-of-poverty after social transfers, severely materially deprived people and people living in households with very low work intensity. The strategy promotes social inclusion by aiming to lift at least 20 million people out of the risk of poverty and social exclusion. The indicator also plays an important role in the Strategy's flagship initiative 'European platform against poverty' to ensure social cohesion.

Definition

The at-risk of poverty or social exclusion indicator sums up the number of persons who are at risk of poverty, severely materially deprived or living in households with very low work intensity. Persons present in several sub-indicators are only counted once. Persons at risk of poverty have an equivalised disposable income below 60 % of the national median equivalised disposable income after social transfers. Material deprivation covers indicators relating to economic strain and durables,. Severely materially deprived persons live in conditions greatly constrained by a lack of resources and cannot afford at least four of the following: to pay rent or utility bills; to keep home adequately warm; to pay unexpected expenses; to eat meat, fish or a protein equivalent every second day; a week's holiday away from home; a car; a washing machine; a colour TV; or a telephone. Persons are considered living in households with very low work intensity if they are aged 0-59 and the working age members in the household worked less than 20 % of their potential during the past year.

Risk of poverty after social transfers

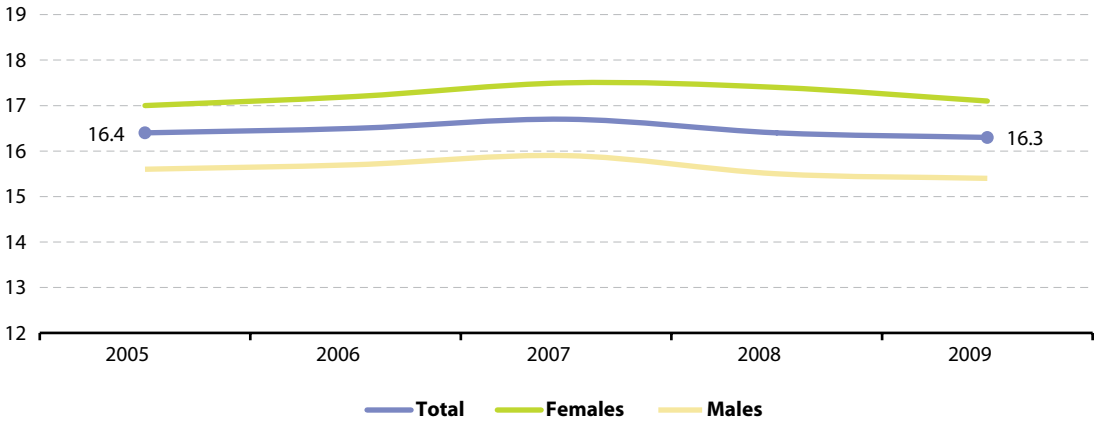
Between 2005 and 2009 the share of people at risk of poverty in the EU decreased very slightly. Women, the young, single people, single parents, and the least educated were most at risk in 2009

Commentary

Slight fall in the share of people at risk of poverty in the EU between 2005 and 2009

Between 2005 and 2009 the risk of poverty decreased marginally by 0.1 percentage points. However, the risk decreased only for men, while there was a slight increase in risk for women. The overall decrease over this period comprised a rise between 2005 and 2007 followed by a decline during 2008 and 2009. In 2009, 16.3 % of the population lived at risk of poverty, compared with 16.4 % in 2005. The proportion was higher for women (17.1 %) than for men (15.4 %), possibly because of lower labour market participation, lower wages and higher share of single parents among women. Possible reasons for the change in the share of people at risk of poverty over time include changing wage structures, social transfer policies, and access to the labour market.

Figure 3.3: People at risk of poverty after social transfers by gender, EU-27
(% of population)



Period evaluated: 2005-2009
Average annual growth rate: -0.2 %
Relative change: -0.6 %
Absolute change: -0.1 percentage points

NB: 2005 and 2006 data are Eurostat estimates.

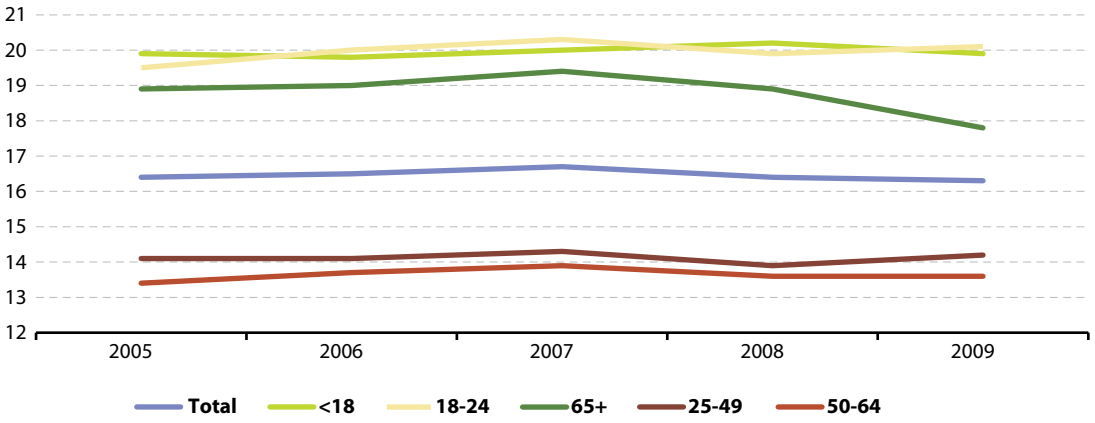
Source: Eurostat (online data codes: tsdsc280, tsdsc350)

In 2009 young people experienced a higher risk of poverty

Young people below the age of 25 were more at risk of poverty than adults aged 25-64. The risk has actually increased for most age groups between 2005 and 2009, and the overall decrease in poverty risk is only due to the massive risk reduction for people aged 65 and more. This age group is probably less dependent on the labour market and primarily relies on social transfers and own savings. The biggest increase was experienced by 18-24 year olds.

Figure 3.4: At-risk-of-poverty rate, by age group, EU-27
(%)

Change over period 2005-2009:
Average annual growth rates
Decreases:
total: -0.2 %
65+: -1.5 %
Increases:
18-24: +0.8 %
25-49: +0.2 %
50-64: +0.4 %
No change:
<18



NB: 2005 and 2006 data are Eurostat estimates.

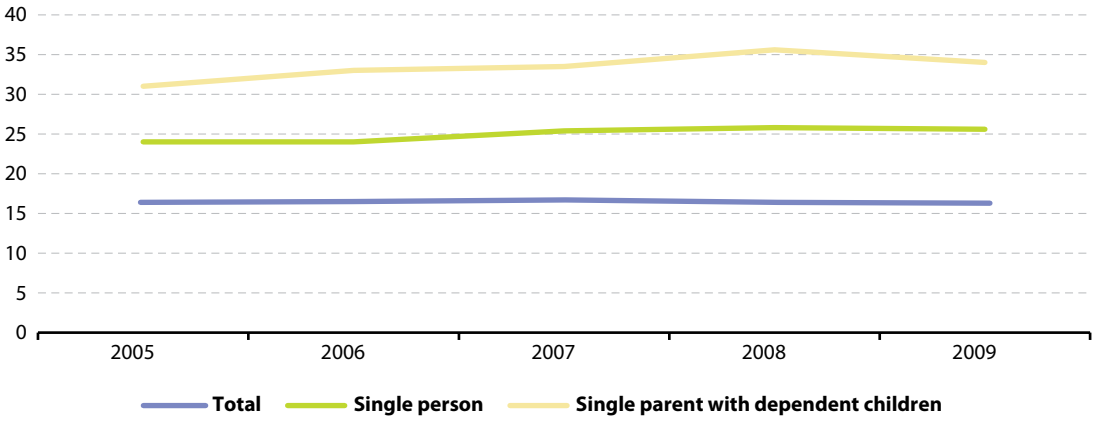
Source: Eurostat (online data code: tsdsc230)

Poverty risk for single people and single parents increased between 2005 and 2009

In 2009 single households, especially single parents, faced a higher risk of poverty than the population average. Between 2005 and 2009 the risk of poverty rose for both single people and single parents. One in three single parents lived at risk of poverty in 2009. This group experienced the greatest increase in risk of all societal subgroups covered. Because they often depend heavily on social transfers, social transfer policies are an important determinant of the share of single parents at risk of poverty.

Figure 3.5: At-risk-of-poverty rate, by household type, EU-27
(%)

Change over period 2005-2009:
Average annual growth rates
Single parent with dependent children:
+2.0 %
Single person:
+1.8 %



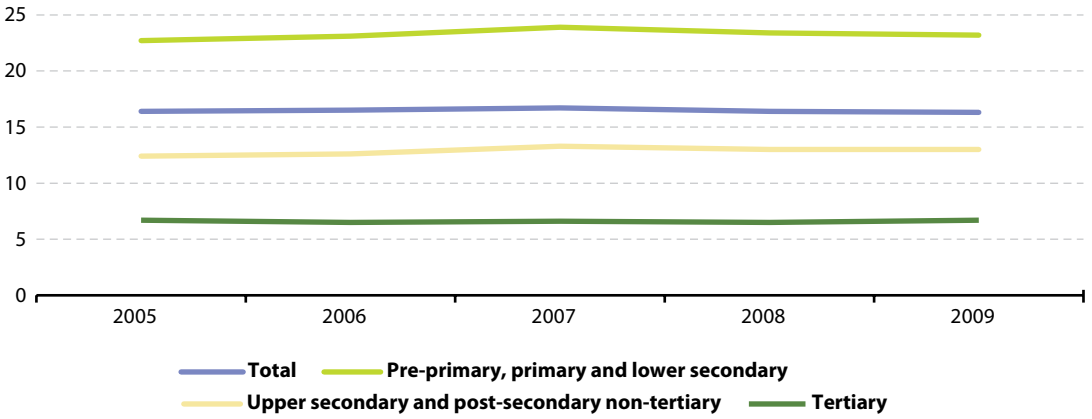
NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc240)

Influence of education on poverty risk grew between 2005 and 2009

There is a clear link between risk of poverty and education level. In 2009, 23.2 % of people with, at most, lower secondary education were at risk of poverty, compared with only 13 % with upper secondary or post-secondary education and 6.7 % with tertiary education. From 2005 to 2009 the at risk rate for people with lower education levels increased at a slower pace compared with those with middle levels of education. For people with higher education levels, the risk of poverty remained constant over this period. The overall risk of poverty fell because of the changing educational composition of the population. These figures show that between 2005 and 2009 education appeared to have a growing impact on poverty risk. It appears that additional demand for labour primarily emerged for better qualified people during this period.

Figure 3.6: At-risk-of-poverty rate, by highest level of education attained, EU-27
(%)



Change over period 2005-2009:

Average annual growth rates

Pre-primary, primary and lower secondary:
+0.6 %

Upper secondary and post-secondary non tertiary:
+1.2 %

Tertiary:
+/-0 %

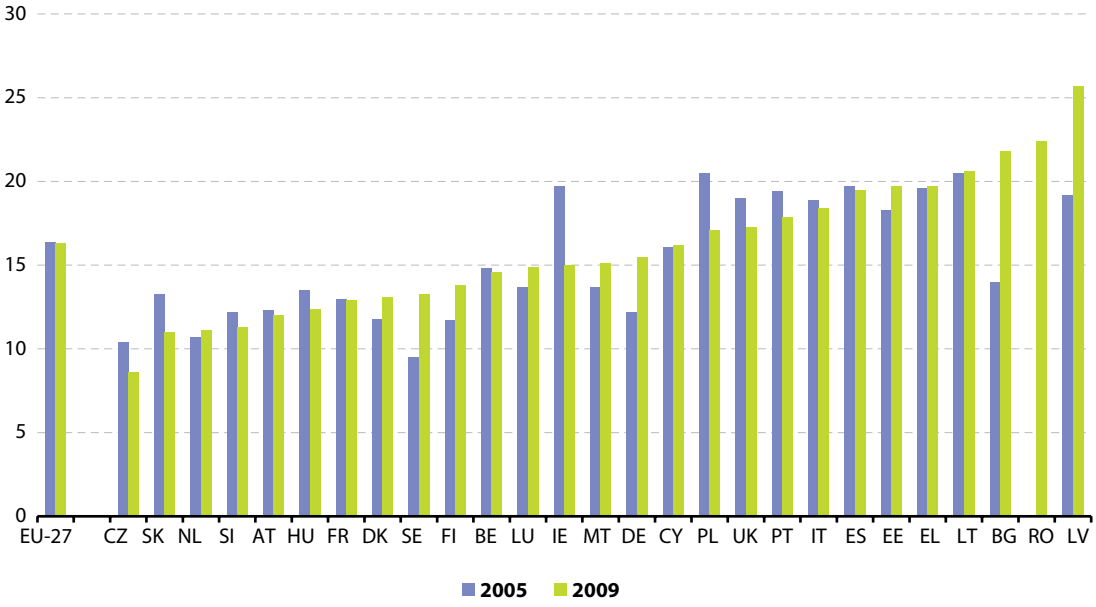
NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc420)

Wide range of risk level and different development in Member States

There is large variation in poverty risk between Member States. In 2009, the share of the population at risk of poverty ranged from 8.6 % to 25.7 %. Between 2005 and 2009 the share of people at risk of poverty declined in 13 Member States and increased in 13 other Member States. For one country, data are not available for the whole period. There seems to be no correlation between the level of poverty risk in a country and its development between 2005 and 2009.

Figure 3.7: People at-risk-of-poverty after social transfers, by country
(% of population)



Key figures in 2009:

Highest:
Latvia: 25.7 %

Lowest:
Czech Republic: 8.6 %

EU-27 average:
16.3 %

NB: 2005 data for EU-27 are Eurostat estimates.

Source: Eurostat (online data code: tsdsc280)

Indicator relevance

The at-risk-of-poverty rate is one of the three components of the at-risk-of-poverty or exclusion headline indicator of the Europe 2020 Strategy. The indicator focuses on monetary poverty, which is a key dimension of social inclusion. The at-risk-of-poverty rate also belongs to the 'Laeken portfolio'

of social inclusion indicators. In 2002, the European Council in Barcelona stressed the importance of fighting poverty and social exclusion. At this meeting, the Member States were invited to set targets in their national action plans to significantly reduce the number of people at risk of poverty and social exclusion by 2010.

Definition

The indicator 'at-risk-of-poverty rate after social transfers' measures the share of persons at risk of monetary poverty. Persons are at risk of poverty if their equivalised disposable income is below the risk-of-poverty threshold, which is set at 60 % of the national median after social transfers.

Severe material deprivation

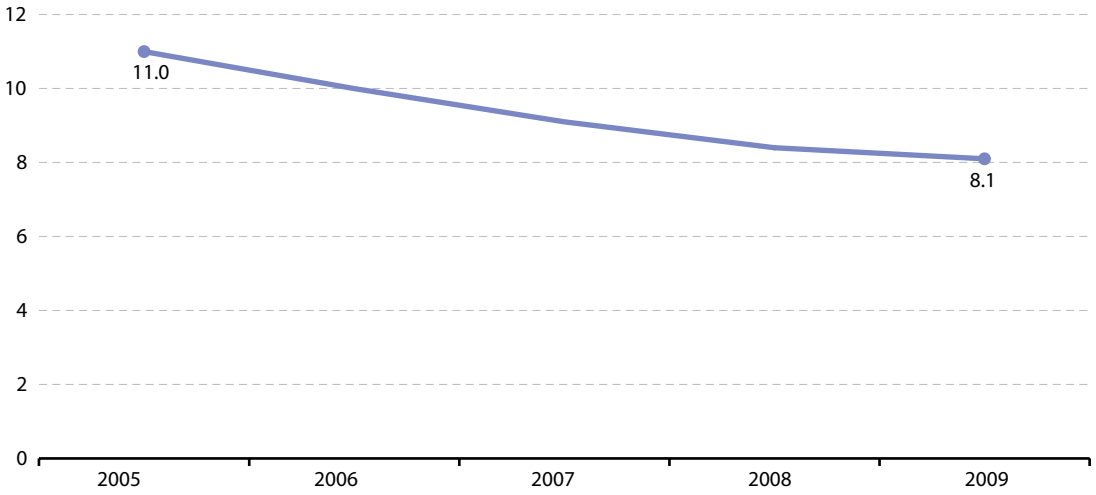
Between 2005 and 2009 there was a clearly favourable reduction in the share of people suffering from severe material deprivation in the EU. Most Member States have shown a similarly favourable trend

Commentary

In 2009 the living conditions of 8.1 % of the EU population were severely burdened by a lack of material resources. Between 2005 and 2009 this share declined substantially by some 26 %. There was a decline in the share of severely materially deprived people in most Member States; however, in seven it rose to above 12.5 %. The share of severely materially deprived people differs widely across Member States, with population shares ranging from 1.1 % to 41.9 %. The Member States with high shares of severely materially deprived people are often countries with a generally lower level of economic development.

In 2009 one in twelve people in the EU was severely materially deprived

Figure 3.8: Severely materially deprived people, EU-27
(% of population)



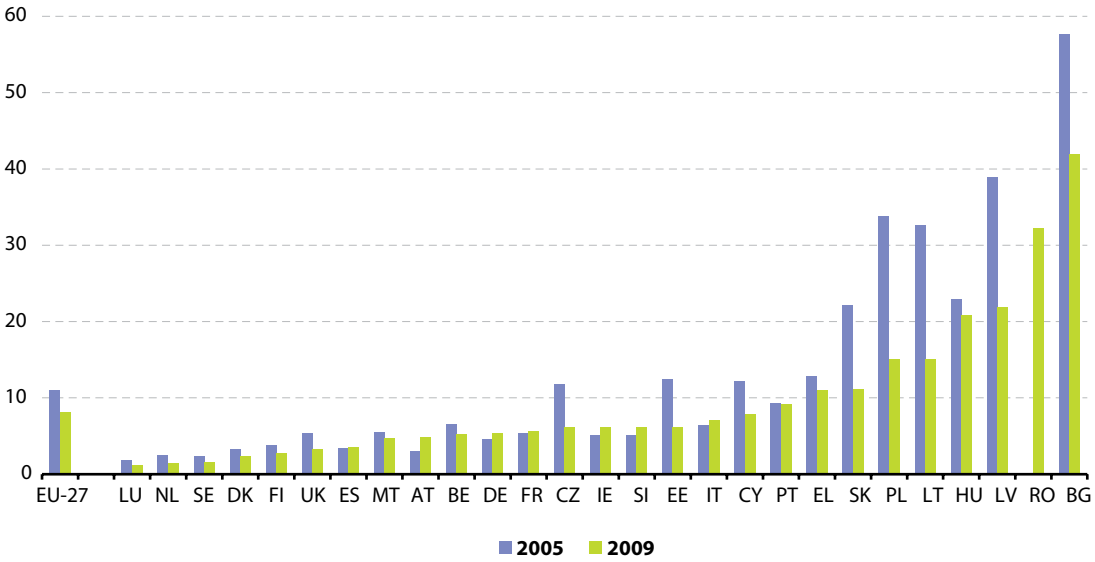
Period evaluated: 2005-2009
Average annual growth rate: -7.4 %
Relative change: -26.4 %
Absolute change: -2.9 percentage points

NB: 2005, 2006 and 2009 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc270)

Figure 3.9: Severely materially deprived people, by country
(% of population)

Key figures in 2009:
Highest:
Bulgaria: 41.9 %
Lowest:
Luxembourg: 1.1 %
EU-27 average:
8.1 %



NB: EU-27 data are Eurostat estimates, 2006 data for BG, 2008 data for UK.

Source: Eurostat (online data code: tsdsc270)

Indicator relevance

Absolute monetary poverty results in a lack of resources to afford essential goods. The 'severe material deprivation' indicator was introduced after the Europe 2020 Strategy was adopted in 2010. It focuses on an absolute measure of poverty and complements the relative measure expressed by the at-risk-of-poverty rate. Poverty is a multidimensional concept. Together with the at-risk-of-poverty rate and the share of people living in a household with very low work intensity, it is a component of the new social inclusion headline indicator, which measures the share of people at risk of poverty or social exclusion.

Definition

'Material deprivation' covers issues relating to economic strain and durables. Severely materially deprived persons have living conditions greatly constrained by a lack of resources and cannot afford at least four of the following: to pay rent or utility bills; to keep their home adequately warm; to pay unexpected expenses; to eat meat, fish or a protein equivalent every second day; a week holiday away from home; a car; a washing machine; a colour TV; or a telephone.

Intensity of poverty

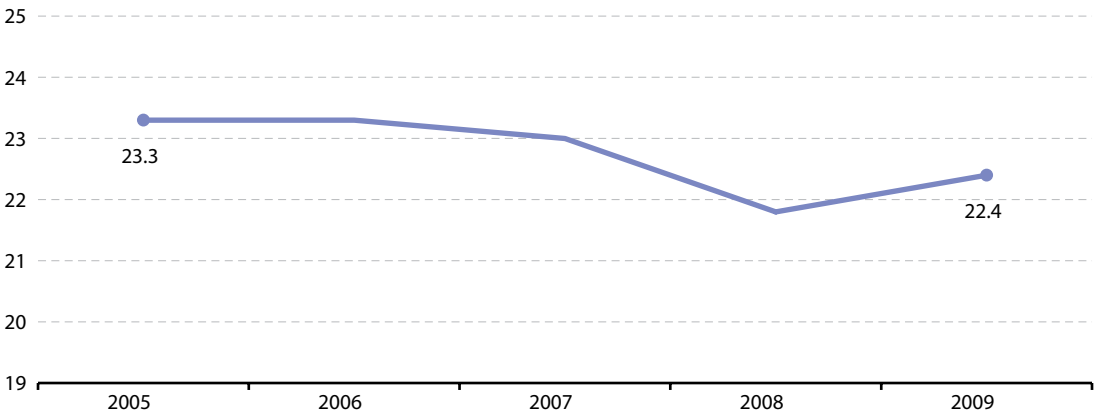
The intensity of poverty in the EU was slightly reduced between 2005 and 2009

Commentary

The intensity of poverty measures how poor people at risk of poverty are on average. It considers how much the poor person's income is below the at-risk-of-poverty threshold. In 2009, the gap between the poverty threshold (which is set at 60 % of the overall national median equivalised income) and the median income of the poor amounted to 22.4 % The gap decreased by almost one percentage point between 2005 and 2009. However, it started widening again after 2008. Possible reasons for the rise after 2008 include effects of the financial crisis and changes in social welfare systems of the Member States.

In 2009 the income of lower earners was on average 22.4 % below the at-risk-of-poverty line

Figure 3.10: Relative median at-risk-of-poverty gap, EU-27
(%)



Period evaluated: 2005-2009
Average annual growth rate: -1.0 %
Relative change: -3.9 %
Absolute change: -0.9 percentage points

NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc250)

Indicator relevance

Intensity of poverty focuses on the lower end of the income distribution. It shows how much income people at risk of poverty lack in order to escape that risk. It thereby complements the picture provided by the at-risk-of-poverty rate after social transfers. Narrowing the gap between the poor people's income and the poverty threshold is needed to achieve the key sustainable development objective of poverty alleviation.

Definition

The relative median at-risk-of-poverty gap is the difference between the median equivalised total income of persons below the at-risk-of-poverty threshold and the threshold itself. It is expressed as a percentage of the at-risk-of-poverty threshold (cut-off point: 60 % of median equivalised income).

Income inequalities

Income inequality within the EU fell slightly between 2005 and 2009

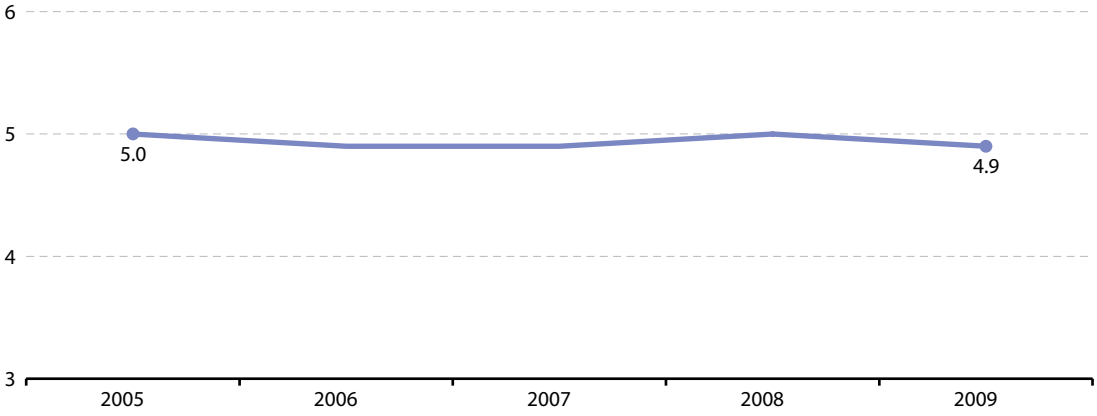
Commentary

In 2009 the top quintile disposed of an income five times higher than the lowest quintile

Income inequality is measured here as the ratio of the total income of the richest 20 % of a country's population to the total income of the poorest 20 %. In 2009 the richest 20 % of the EU's population earned almost five times more than the lowest 20 % of the population. This represents a slight decrease (-2 %) from its 2005 value and income inequality in the EU was therefore slightly reduced between 2005 and 2009. One possible reason for this could be that the incomes of the rich grew slightly slower than those of the poor between 2005 and 2009.

Figure 3.11: Inequality of income distribution, EU-27
(income quintile share ratio)

Period evaluated: 2005-2009
Average annual growth rate: -0.5 %
Relative change: -2.0 %
Absolute change: -0.1 percentage points



NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc260)

Indicator relevance

Reducing inequalities contributes to the Sustainable Development Strategy's goal of achieving a high level of social cohesion. It helps to diminish marginalisation of the most vulnerable and may ease social tensions. The quintile share ratio focuses on the gap 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 segments, in contrast, for instance, to the Gini coefficient. The indicator belongs to the 'Laeken portfolio' of social inclusion indicators.

Definition

The income inequality indicator (income quintile share ratio) is defined as the ratio of total equivalised disposable household 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).

Households with very low work intensity

Between 2005 and 2009 there was a clearly favourable reduction in the share of people living in households with very low work intensity in the EU, reflecting favourable trends in most Member States

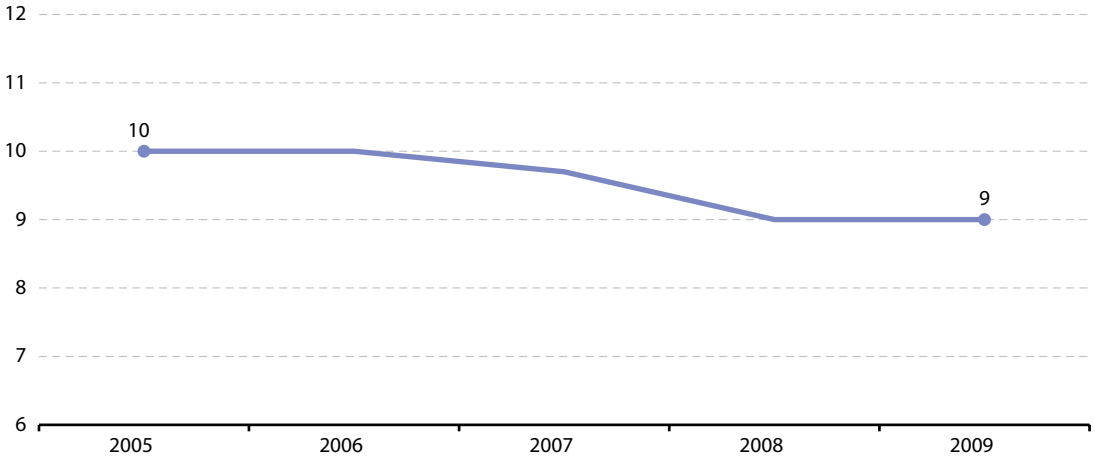
Commentary

In 2009, 9.0 % of the population, or 34 million people, in the EU were living in households whose members were working at less than 20 % of their capacity. This means that in these households, either no one was working or its members were working at very low work intensity. Between 2005 and 2009 this share fell by one percentage point or 5 million people.

In 2009 one in eleven people was living in a jobless household or in a household working at very limited intensity

Most Member States have shown a favourable trend. The share of people living in households with very low work intensity decreased in 20 Member States, with reductions by over 50 % in some of them. However, in six Member States, the share rose between 2005 and 2009. Possible reasons for this increase include the negative effects of the financial crisis on the labour market.

Figure 3.12: People living in households with very low work intensity, EU-27
(% of population)



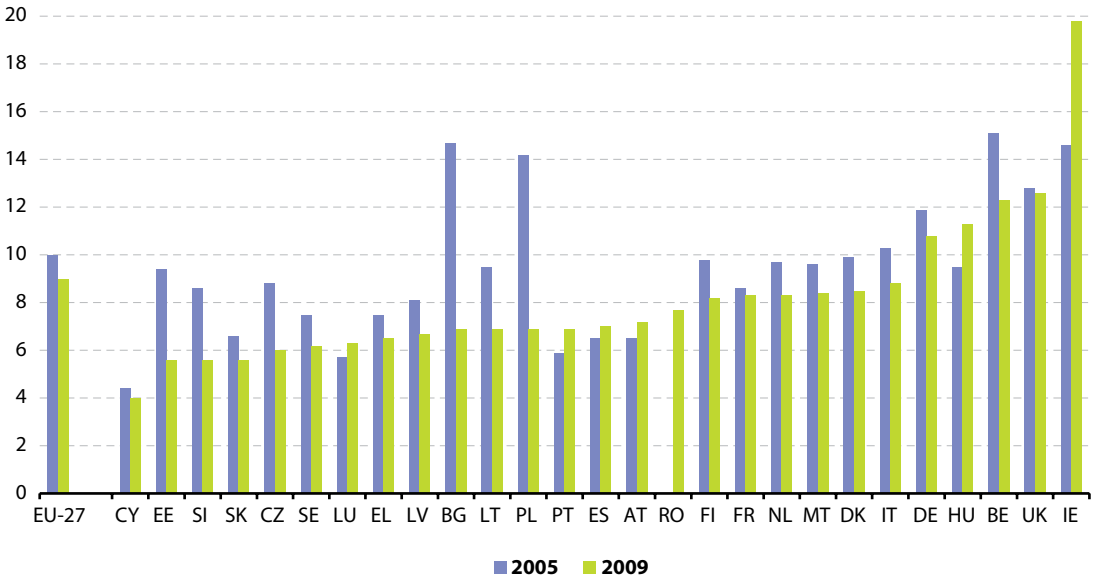
Period evaluated: 2005-2009
Average annual growth rate: -2.6 %
Relative change: -10 %
Absolute change: -1.0 percentage points

NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc310)

Figure 3.13: People living in households with very low work intensity, by country
(% of population)

Key figures in 2009:
Highest:
Ireland: 19.8 %
Lowest:
Cyprus: 4.0 %
EU-27 average:
9.0 %



NB: 2005 data for EU-27 are Eurostat estimates; 2006 data used for BG.

Source: Eurostat (online data code: tsdsc310)

Indicator relevance

The well-being of a household is put at risk when it contains no working members or the adults do not work to their full potential. People in jobless or low-work intensity households experience a particularly high risk of poverty. Besides being dependent on social benefits, their contact with the labour market is further reduced and access to culture, sport and leisure is hampered. Children growing up in households with very low work intensity are at risk of unemployment later in life because they have no role model to introduce them to a 'culture of work'. The indicator is one of three components of the new social inclusion headline indicator set out in the Europe 2020 Strategy.

Definition

Persons are defined as living in households with very low work intensity if they are aged 0-59 and the working age members in the household worked less than 20 % of their potential during the past year.

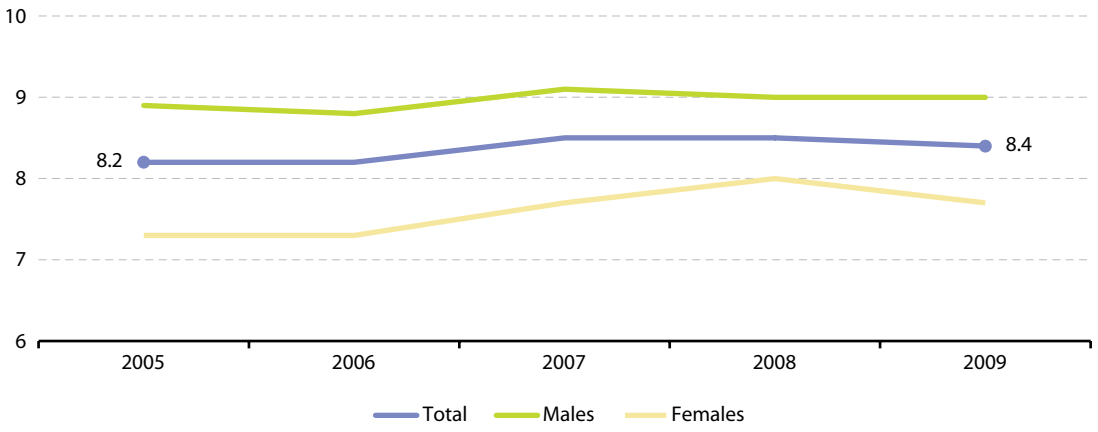
Working poor

The share of employed people in the EU who were at risk of poverty despite being employed increased between 2005 and 2009

Commentary

In 2009, 8.4 % of employed people in the EU lived in households with insufficient disposable income to lift them out of poverty ('working poor'). The in-work-at-risk-of-poverty rate increased marginally by 2.4 % between 2005 and 2009. Employed men were at a higher risk of poverty than employed women, however, the gender gap narrowed slightly between 2005 and 2009. Comparison with the overall at-risk-of-poverty rate suggests employment halved the likelihood of being at risk of poverty, because the overall rate after social transfer is about twice as high for unemployed people as for employed people.

Figure 3.14: In work at-risk-of-poverty rate, EU-27
(%)



Period evaluated: 2005-2009
Average annual growth rate: +0.6 %
Relative change: +2.4 %
Absolute change: +0.2 percentage points

NB: 2005 and 2006 data are Eurostat estimates.

Source: Eurostat (online data code: tsdsc320)

Indicator relevance

The in-work-at-risk-of-poverty rate indicates to what extent employment helps people to overcome the risk of poverty. The 'working poor' represent a subgroup of those at risk of poverty in general. Reducing the in-work poverty risk may require different policies from those used to reduce the overall at-risk-of-poverty rate because in-work poverty is not caused by a lack of access to the labour market, but, amongst other reasons, by the market's inability to pay sufficiently high wages. This is a further reason why in-work risk of poverty is monitored separately from the risk of poverty of the total population.

Definition

This indicator is defined as the share of persons in work aged 18 or over whose national median disposable household income after social transfers is below the at-risk-of-poverty threshold, which is set at 60 % of the national median.

Long-term unemployment

Between 2000 and 2010 long-term unemployment decreased slightly for the active population in the EU

Commentary

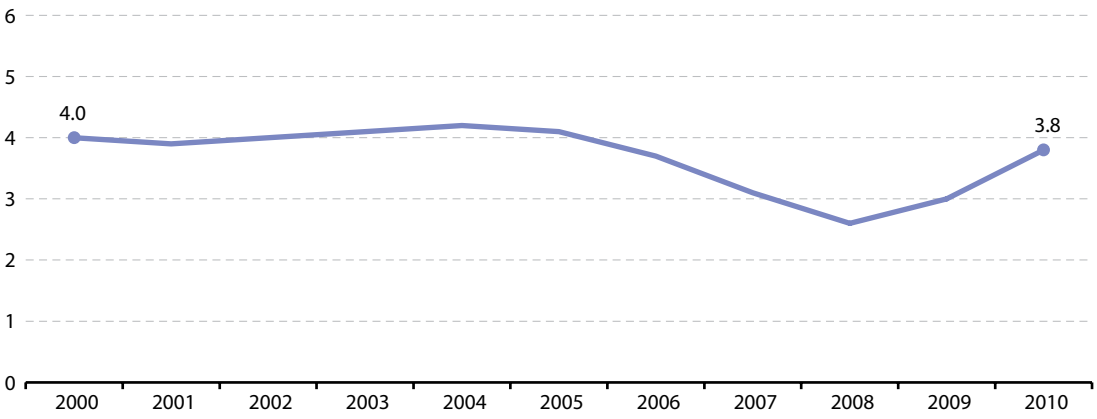
Long-term unemployment increased with the recent economic downturn almost returning to the level of 2000

In 2010, 3.8 % of the economically active population had been unemployed for longer than a year. Between 2000 and 2010 the overall long-term unemployment rate in the EU decreased slightly by 5 %. This overall fall, however, masks a changing situation over the decade. The long-term unemployment rate, as well as the general unemployment rate (see the chapter on socioeconomic development), rose between 2001 and 2004 and again, more dramatically, between 2008 and 2010 in response to slower economic growth or a recession.

A comparison of the years 2001 and 2008, which represent minimum levels reached in an economic cycle, suggests that the long-term unemployment rate that was not affected by fluctuations in economic growth decreased by one-third (from 3.9 % to 2.6 %). In 2010 the long-term unemployment rate varied widely across Member States, and ranged from 0.5 % to 6.5 %. However the situation of long-term unemployment is expected to deteriorate from 2010 onwards as the people joining the ranks of unemployed since the onset of the crisis in 2008 meet the criteria of long-term unemployed.

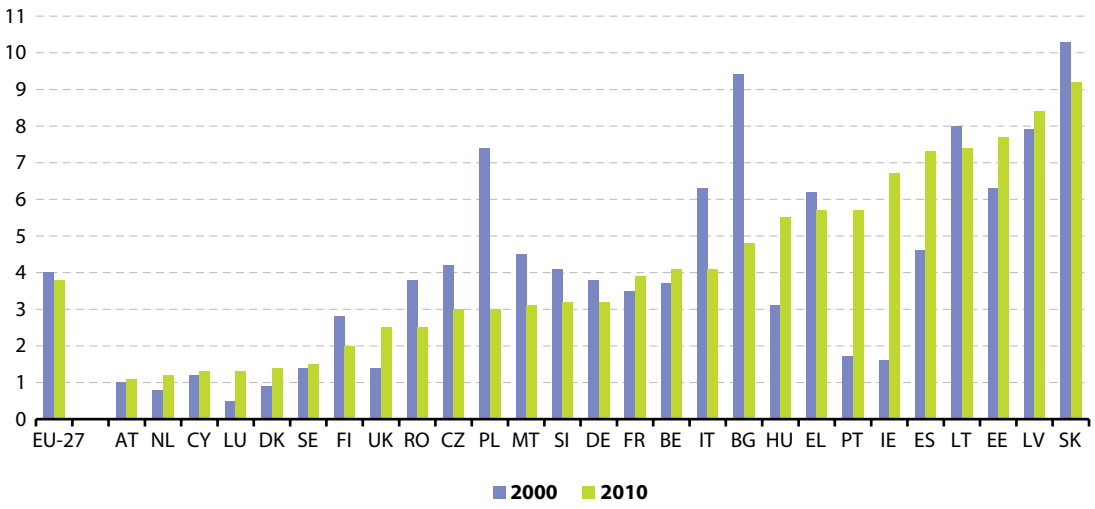
Figure 3.15: Total long-term unemployment rate, EU-27
(%)

Period evaluated: 2000-2010
Average annual growth rate: -0.5 %
Relative change: -5.0 %
Absolute change: -0.2 percentage points



Source: Eurostat (online data code: tsdsc330)

Figure 3.16: Total long-term unemployment rate, by country (%)



Key figures in 2010:

Highest:
Slovakia: 9.2 %

Lowest:
Austria: 1.1 %

EU-27 average:
3.8 %

Source: Eurostat (online data code: tsdsc330)

Indicator relevance

Long-term unemployed people have more difficulties finding work than those unemployed for shorter periods. They also face a high risk of social exclusion. For these reasons, this group is monitored separately. It is important to note that long-term unemployment could sometimes be higher if people participating in benefit schemes or labour market programmes are counted.

Definition

The long-term unemployment rate is calculated as long-term (twelve months or longer) unemployed persons aged at least 15 years, who are not living in collective households who are available within the next two weeks and are actively seeking work, as a share of the total active population of the same age group.

Gender pay gap

Between 2006 and 2009 the gap between women's and men's earnings was substantially reduced in the EU

Commentary

In 2009 the gender pay gap was at 17.1 %, with large variations across countries

In 2009, women earned 17.1 % less per hour than men. In 2006, the difference was marginally higher at 17.7 %.

At the Member State level, values in 2009 ranged from 3.2 % to 30.9 %. The maximum value implies that in some Member States, men earned up to one-third more per hour than women. While in 13 Member States the gap widened, it narrowed in the other 14.

Several factors contribute to the gap

Because the indicator describes the gender pay gap in unadjusted form, the results can be interpreted in several ways. Factors which may influence the gap's size are bargaining structures, wage discrimination, 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.

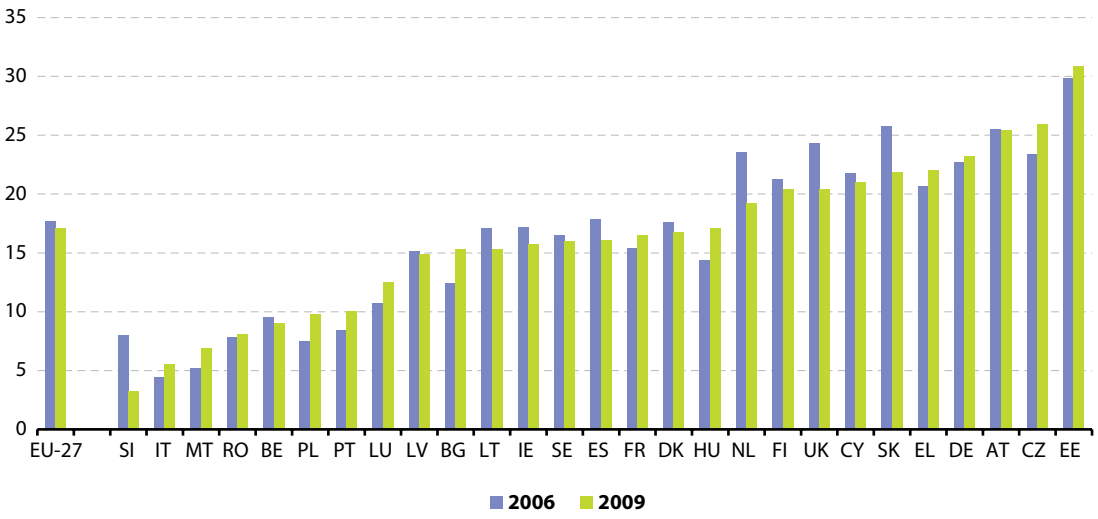
Figure 3.17: Gender pay gap in unadjusted form, by country
(%)

Key figures in 2009:

Highest:
Estonia: 30.9 %

Lowest:
Slovenia: 3.2 %

EU-27 average:
17.1 %



NB: 2007 data for EE; 2008 data for BE and EL; 2009 data for EU-27, IE, ES and FR are provisional

Source: Eurostat (online data code: tsdsc340)

Indicator relevance

The gender pay gap represents one aspect of gender inequality. Gender equality has been an EU goal since the Nice Treaty. Because fairer wages will provide additional working incentives for women, closing the pay gap is important to boosting the participation of women in the labour market. This is another operational objective of the Sustainable Development Strategy. It states 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 ten or more employees are included.

Early school leavers

The decline from 2003 to 2010 in the share of early leavers from education and training in the EU may not be fast enough to reach the target of less than 10 % in 2020. In 2010 14.1 % of young people in the EU left school before completing lower secondary education

Commentary

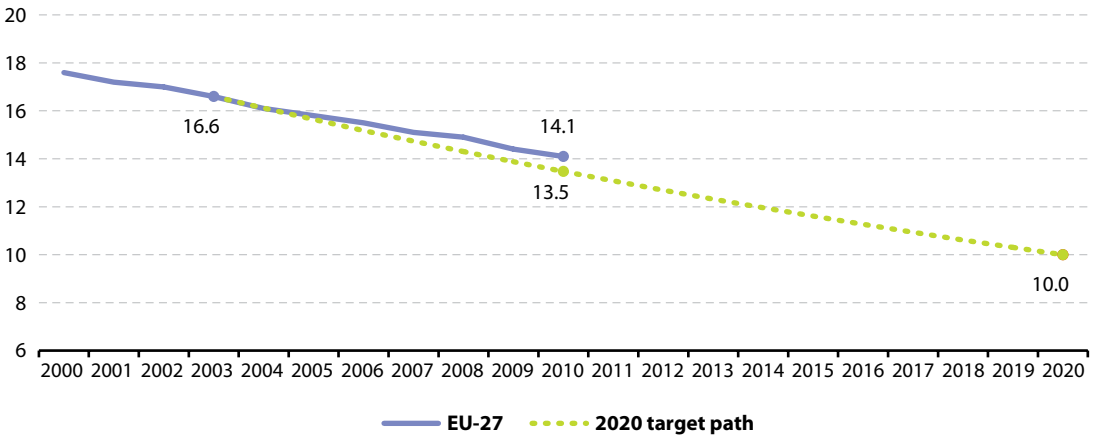
In 2010, 14.1 % of those aged between 18 and 24 years old had not completed lower secondary education and were not in further training. Since 2003 the share of early leavers has fallen steadily by 2.3 % per year on average. Starting from 16.6 % in 2003, progress would have needed to be slightly faster to reach the target of less than 10 % set in the Europe 2020 Strategy. The 2010 target set in the EU Sustainable Development Strategy, also of 10 %, has not been met.

Constant progress, but may be too slow to reach the 2020 target

At the national level, the share of early leavers from education and training varied from 4.7 % to 36.8 % in 2010. 22 out of the 27 Member States saw improvement between 2003 and 2010. Eight countries had already achieved the target by 2010.

Eight countries have reached the target

Figure 3.18: Early leavers from education and training, EU-27
(%)



Period evaluated: 2003-2010

Distance to target path in 2010: +0.6 percentage points

Average annual growth rate: -2.3 %

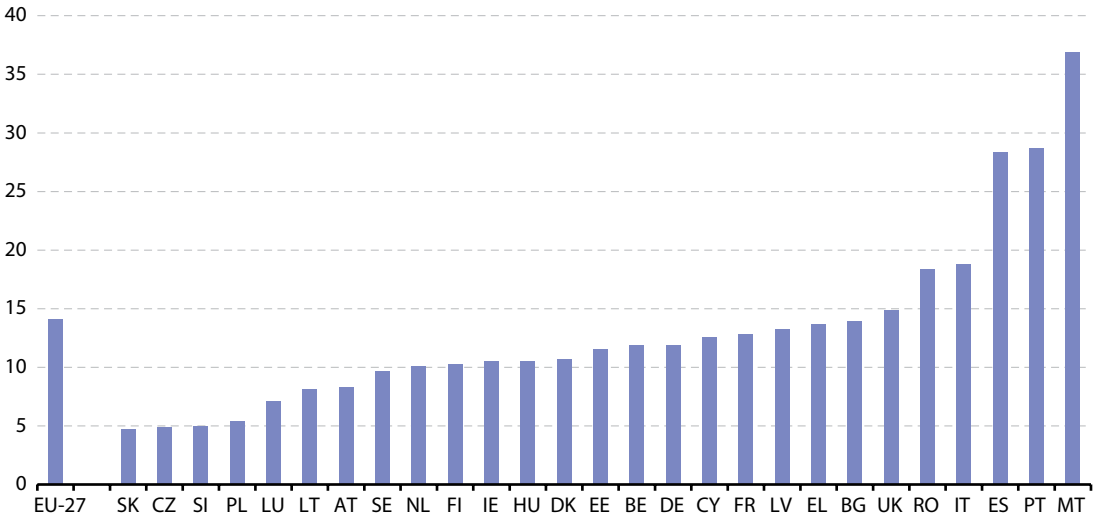
Required annual growth rate: -2.9 %

NB: 2000 and 2001 data are estimates; break in series in 2003.

Source: Eurostat (online data code: tsdsc410)

Figure 3.19: Early leavers from education and training, by country, 2010 (%)

Key figures in 2009:
Highest:
Malta: 36.9 %
Lowest:
Slovakia: 4.7 %
EU-27 average:
14.1 %



NB: data for MT and SE are provisional, data for LU and SI are unreliable or uncertain, break in series in 2010 for NL.

Source: Eurostat (online data code: tsdsc410)

Indicator relevance

Young adults who lack a basic education are more likely to be unemployed or working in low-wage jobs, and are less likely to progress in their career. A basic education may allow people to adapt to a changing labour market.

The Europe 2020 Strategy calls for intensified efforts to reduce the proportion of early leavers from education and training to less than 10 % by 2020. The 10 % target is stated as one of five headline targets until 2020. The EU Sustainable Development Strategy set the same target for 2010.

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 who were not in further education or training during the last four weeks.

Adults with low educational attainment

In the EU, the share of adults of working age with at most lower secondary education declined between 2000 and 2010, improving possibilities for personal and professional development

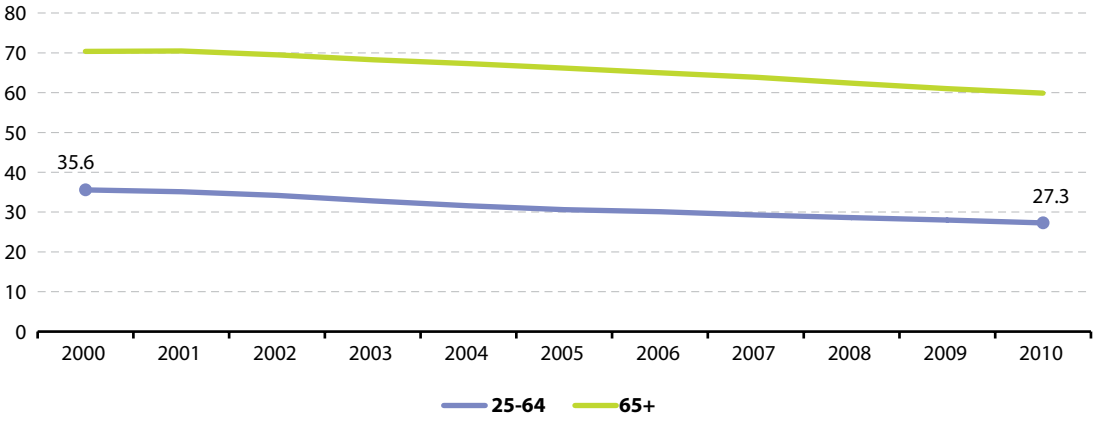
Commentary

The prevalence of low educational attainment in the EU differs between age groups. In 2000, 35.6 % of 25 to 64-year-olds had at most lower secondary education; ten years later their share declined to 27.3 %. The respective shares for people aged 65 and over were higher and amounted to 59.9 % in 2010. In both age groups the percentages have steadily fallen. The relative decline was greater for the 25 to 64-year-olds than for the over-65s.

The prevalence of low educational attainment considerably reduced in all age groups between 2000 and 2010

Reasons for this favourable trend include intensified training of adults and, above all, the presence of a cohort effect: younger people, especially younger women, tend to have better education, and as they grow older the prevalence of low educational attainment in a given age group declines.

Figure 3.20: People with low educational attainment, by age group, EU-27
(%)



Period evaluated: 2000-2010 (age group 25-64)
Average annual growth rate: -2.6 %
Relative change: -23.3 %
Absolute change: -8.3 percentage points

Source: Eurostat (online data code: tsdsc430)

Indicator relevance

Low educational attainment is a barrier to personal and professional development and impedes society's ambition of reducing inequalities between individuals or groups. Individuals with low levels of education are more likely to be out of work in low-quality employment.

The EU Sustainable Development Strategy included education and training among the 'cross cutting policies contributing to the knowledge society'. Additionally, the Europe 2020 strategy includes a target on educational attainment of adults, calling for an increase in the share of the population aged 30 to 34 having completed tertiary education to at least 40 % in 2020.

Definition

The indicator defines the percentage of the population having reached UNESCO's **International Standard Classification of Education (ISCED) level** of 2 or less (lower secondary education at most).

Lifelong learning

In the EU, participation in lifelong learning did not grow sufficiently between 2003 and 2010 to reach the 2010 target of 12.5 %

Commentary

Participation increased until 2005, but has declined since then

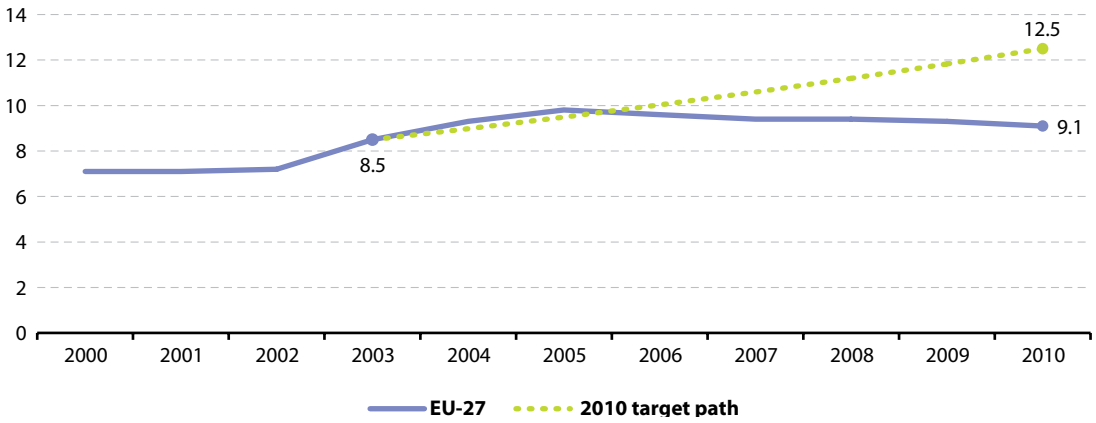
The participation of adult working age people in education and training in the EU rose from 2003 to 2005, peaking at 9.8 % in 2005. Between 2005 and 2010, however, participation fell back to 9.1 %. As a result, the average rise between 2003 and 2010 was too slow to stay on track in order to meet the 2010 target of 12.5 %.

Participation is related to economic development

The decline from 2005 onwards might be due to the economic upswing during this period, making entry into the labour market more attractive than training. As a result, participation rates in lifelong learning may rise again after the economic downturn following the recent financial crisis. However, there are other factors influencing participation in lifelong learning as well, such as the design of social security policies.

Figure 3.21: Life-long learning, EU-27
(%)

Period evaluated: 2003-2010
Distance to target in 2010: -3.4 percentage points
Average annual growth rate: +1.0 %
Required annual growth rate: +5.7 %



NB: 2000 and 2001 data are estimates; break in series in 2003; 2009 data are provisional.

Source: Eurostat (online data code: tsdsc440)

Indicator relevance

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 EU should lead the world in education quality and set a target for participation in lifelong learning to reach 12.5 % of the adult working age population in 2010. In the context of the EU Sustainable Development Strategy, the European Parliament and the Council adopted an integrated life-long learning action programme in 2006, for the period 2007 to 2013. The programme aims to contribute to sustainable development through lifelong learning, by helping to develop an advanced 'knowledge society'. Implementation of lifelong learning principles also plays an important role in the Europe 2020 Strategy's flagship initiative 'An agenda for new skills and jobs'.

Definition

The indicator is defined as the percentage of the population aged 25 to 64 participating in education or training in the last four weeks. Data are from the EU Labour Force Survey. From 2004 onwards, this variable is derived from two variables, i.e. 'participation in regular education' and 'participation in other taught activities'. Self learning activities are no longer covered.

Low reading literacy of pupils

Reading literacy performance in the EU worsened between 2000 and 2006. Despite considerable improvement in 2009, the target of reducing low literacy performance by 20 % in 2010 may not be reached.

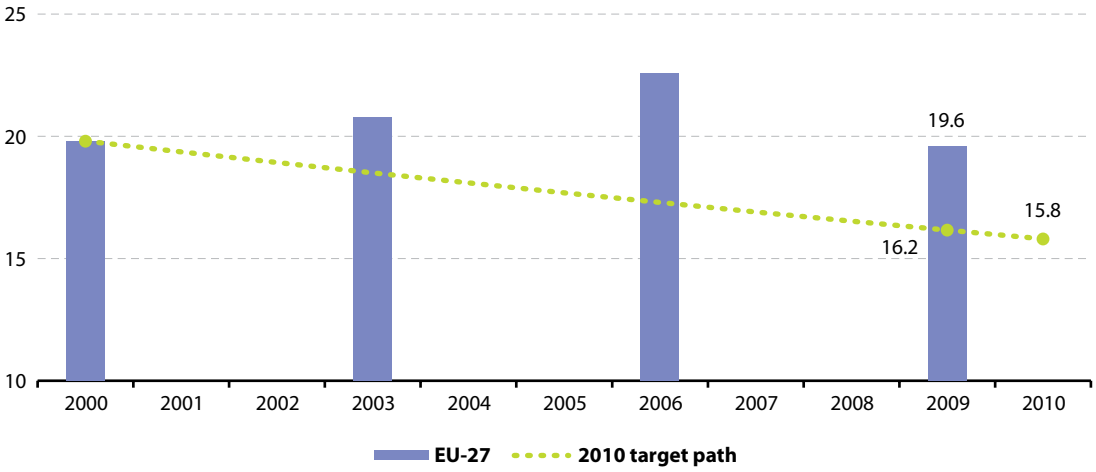
Commentary

Prevalence of low reading literacy performance worsened between 2000 and 2006, but improved considerably in 2009. The 2010 target may nevertheless not be reached

Between 2000 and 2006, the share of 15-year-old EU pupils showing only low reading performance in the OECD Programme for International Student Assessment (PISA) increased from 19.8 % to 22.6 %. However, in 2009 the rate fell considerably to 19.6 %. Although this presents a slight improvement on 2000 levels, the target of reducing low reading literacy performance by 20 % compared with 2000 by 2010 seems hard to reach. To meet it, low reading literacy would have to drop by almost 20 % in one year. However, achieving a fast change in trend might be difficult because reading literacy is measured at the end of school age, inferring that policy changes are likely to take several years to show in the indicator.

Many factors may account for the undesirable rise in low reading literacy performance between 2000 and 2006, and the improvement in 2009. Possible reasons range from more rigorous sampling procedures in the PISA process, to increased socioeconomic inequality and migration. Since the rise is widespread among many Member States, it is difficult to attribute it to specific education policies.

Figure 3.22: Low reading literacy performance of pupils, EU-27
(% of 15-year-old pupils who are at level 1 or below of the PISA combined reading literacy scale)



Period evaluated: 2000-2009

Distance to target path in 2009: +3.4 percentage points

Average annual growth rate: -0.1 %

Required annual growth rate: -2.2 %

NB: EU-27 figures exclude Cyprus and Malta; 2009 data are provisional.

Source: OECD Programme for International Student Assessment (PISA), Eurostat (online data code: tsdsc450)

Indicator relevance

Reading literacy is considered a key indicator of competence of young people. The indicator is one of 29 used by the European Commission to monitor progress towards common objectives in education and training. In 2000, the Lisbon Council concluded that a European framework should define the new basic skills as a key measure in Europe's response to globalisation and the shift to knowledge-based economies. The Barcelona European Council in 2002 underlined the need to improve basic skills. The Council acknowledged the importance of acquiring basic skills, and adopted a specific benchmark to

decrease the percentage of low-achieving 15-year-olds in reading literacy in the EU by at least 20 % by 2010, compared with the year 2000. The EU Sustainable Development Strategy highlights education and training in its 'cross cutting policies contributing to the knowledge society'.

Definition

The indicator is defined as the percentage of 15-year-old pupils with reading literacy proficiency level 1 and lower on the PISA reading literacy scale.

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

European Union Statistics on Income and Living Conditions (EU-SILC)

The **EU statistics on income and living conditions** (**EU-SILC**) is the reference source for comparative statistics on income distribution and social inclusion in the

The EU-SILC was launched in 2003 on the basis of 'gentlemen's agreement' between six EU Member Sates (Belgium, Denmark, Greece, Ireland, Luxembourg and Austria) and Norway. From 2005 onwards, EU-SILC covered the then 25 Member States plus Norway and Iceland. Later on Bulgaria (2006), Romania, Turkey and Switzerland (2007) launched EU-SILC. EU-SILC provides two types of annual data:

- cross-sectional data pertaining to a given time or a certain time period with variables on income, poverty, social exclusion and other living conditions;
- longitudinal data pertaining to individual-level changes over time, observed periodically over a four-year period.

EU-SILC is based on the idea of a common 'framework' rather than a common 'survey'. The common framework defines the harmonised lists of target primary (annual) and secondary (every four years or less frequently) variables to be transmitted to Eurostat; common guidelines and procedures; common concepts (household and income) and classifications aimed at maximising comparability of the information produced.

The reference population in EU-SILC includes all private households and their current members residing in the territory of the countries at the time of data collection. Persons living in collective households, homeless persons or other difficult to reach groups are not covered. All household members are surveyed, but only those aged 16 and more are interviewed.

Risk of poverty or social exclusion, Risk of poverty after social transfers, Intensity of poverty, Working poor

Data are taken from the EU-SILC (see above). 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.

People at risk of poverty or social exclusion

The data are derived from EU-SILC (see above). This indicator corresponds to the sum of persons who are:

- at risk of poverty or
- severely materially deprived or
- living in households with very low work intensity.

Persons present in several sub-indicators are only counted once.

According to the June 2010 European Council conclusions the Member States are free to set their national targets choosing the most appropriate indicators in terms of their national priorities. Thus the three sub-indicators should be treated as indicators in their own right.

'Equivalised 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 household members, divided by the equivalised household size, where household members 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.

Risk of poverty after social transfers

The data are derived from EU-SILC (see above).The indicator measures the share of persons whose equivalised disposable income is below the risk-of-poverty threshold, which is set at 60 % of the national median after social transfers.

Severe material deprivation rate

The data come from EU-SILC (see above). The indicator is defined as the share of population with an enforced lack of at least four out of nine material deprivation items in the 'economic strain and durables' dimension.

The nine items considered are: 1) arrears on mortgage or rent payments, utility bills, hire purchase instalments or other loan payments; 2) capacity to afford paying for one week's annual holiday away from home; 3) capacity to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day; 4) capacity to face unexpected financial expenses [set amount corresponding to the monthly national at-risk-of-poverty threshold of the previous year]; 5) household cannot afford a telephone (including mobile phone); 6) household cannot afford a colour TV; 7) household cannot afford a washing machine; 8) household cannot afford a car and 9) ability of the household to pay for keeping its home adequately warm.

People living in households with very low work intensity

The data come from EU-SILC (see above). It is defined as the share of population aged 0-59 living in households where the working age members worked less than 20% of their total work potential during the past year.

The work intensity of the household is defined as the ratio between on the one hand, the number of months that all working age household members have been working during the income reference year and on the other hand, the total number of months that could theoretically have been worked by the same household members. A working age person is defined as a person aged 18-59, not being a student aged 18-24. The households composed only of children, of students aged less then 25 and/or persons aged 60 or more are totally excluded from the indicator computation.

Intensity of poverty

The data come from EU-SILC (see above).

Working poor

The data come from EU-SILC (see above).

Income inequalities

The data stem from 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. First, 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).

Long-term unemployment

Long-term unemployed (12 months and more) comprise persons aged at least 15, who are not living in collective households, who will be without work during the next two weeks, who would be available to start work within the next two weeks and who are seeking work (have actively sought employment at some time during the previous four weeks or are not seeking a job because they have already found a job to start later). The total active population (labour force) is the total number of the employed and unemployed population. The duration of unemployment is defined as the duration of a search for a job or as the period of time since the last job was held (if this period is shorter than the duration of the search for a job).

The data are derived from the quarterly EU labour force survey (LFS) which is the main source of internationally comparable EU labour market statistics. It is governed principally by the Council Regulation (EC) No 577/98 of 9 March 1998 on the organisation of a labour force sample survey in the Community (OJ L 77, 14.3.1998). 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.

Gender pay gap

The indicator is based on several data sources, including the European Community Household Panel (ECHP), European Union Statistics on Income and Living Conditions (EU-SILC) and national sources.

Administrative data are used for Luxembourg and the labour force survey 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.

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): 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.

Early leavers from education and training refers to persons aged 18 to 24 fulfilling the following two conditions: first, the highest level of education or training attained is ISCED 0, 1, 2 or 3c short, second, respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions 'highest level of education or training attained' and 'participation to education and training'.

The indicator of Low educational attainment is defined as the percentage of persons aged 25 to 64 with an education level ISCED of 2 or less.

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 (see footnotes on the SDI website). 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 EU 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 previous years' figures. 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 which correspond to the season spring in UK and IE,
- 13 weeks from April to June in the other countries.

Low reading literacy

The data come from the Programme for International Student Assessment (PISA) which is an internationally standardised assessment which was developed by the OECD and administered to 15-year-olds in schools. PISA is methodologically highly complex, requiring intensive collaboration among many stakeholders. The PISA Technical Report describes those methodologies, along with other features that have enabled PISA to provide high quality data to support policy formation and review. The descriptions are provided at a level of detail that will enable review and potentially replication of the implemented procedures and technical solutions to problems.


ACCES
INTERDIT

4 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' (overall objective of the EU Sustainable Development Strategy for the key challenge "social inclusion, demography and migration")

Overview of main changes

The demographic indicators, life expectancy and fertility, as well as those related to the adequacy of income in old age, have been developing favourably. However, even if substantial progress has been made, the employment rate of older workers missed the 2010 target. Furthermore, the indicators monitoring the sustainability of public finances have developed unfavourably. Levels of public debt, for example, rose to 80 % on average within the EU in 2010 and there has been insufficient progress in increasing the average age of retirement.

Table 4.1: Evaluation of changes in the demographic changes theme *(EU-27, from 2000)*([1])

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

(*) From 2002
(**) From 2005
(***) From 2001

([1]) An explanation of the evaluation method is given in the introduction chapter.

Headline indicator

More older workers employed although the 2010 target was missed

The target of having half of older workers employed was not reached in 2010. The positive increase throughout the whole period, however, demonstrates improvements in the participation of older workers in the labour market, reducing demand for expenditure on pensions, one of the objectives of the EU Sustainable Development Strategy.

Demography

The ratio of the active to inactive population will continue to decline with potential consequences for the sustainability of public finances

Life expectancy at age 65 rose between 2002 and 2008 for both men and women. The rate of population renewal also rose slightly; however, it remains below the rate of replacement, and, taken together with longer life expectancies, indicates that the working age population will continue to shrink relative to the population who have retired.

Immigration into the EU outweighs emigration, although it has sharply decreased between 2007 and 2009. The ratio of elderly people to the working age population increased between 1990 and 2009, from 20 to just over 25 people aged 65 years or older per 100 persons of working age. This is projected to increase further as a result of longer life expectancies and fertility rates below the level needed to maintain the population, and to reach more than 50 by 2060. An increase in the old-age dependency ratio, coupled with low retirement ages, will potentially place additional strain on public finances.

Old-age income adequacy

Average pension levels remain adequate and the risk of poverty has fallen for the elderly

The income level from pensions of persons aged between 65 and 74, compared to the income level from earnings of those aged between 50 and 59, remained stable between 2005 and 2009. The risk of poverty for over-65s decreased between 2000 and 2009, as also happened in the mid-1990s.

Public finance sustainability

The current economic crisis is placing pressure on the sustainability of public finances

Over the period 2000 to 2007 the level of public debt was successfully reduced, falling to just below the 60 % EU reference mark in 2007. After 2007, however, with the onset of the financial crisis, public debt increased to even higher levels than those seen in the mid-1990s, reaching 80 % in 2010.

Despite an increase in the employment rate of older workers (see headline indicator), the rate of increase in the average retirement age has slowed down, making it unlikely that the 2010 target rate set at the Barcelona European Council in 2002 can be achieved. Expenditure on care for the elderly as a share of GDP, after increasing between 2000 and 2005, returned by 2008 to a level close to what it was in 2000.

Both the ageing population and structure of the social protection systems within the Member States are placing pressure on the sustainability of public finances. Changes in the projected income-replacement ratio and public pension expenditure demonstrate the impact ageing has on this sustainability.

Demographic changes and sustainable development

The demography of the EU influences the course of sustainability

The dynamics of population change exert a strong influence on the path towards sustainable development. These changes affect all aspects of sustainability, including those that pertain to the environment, consumption, infrastructure and even fiscal policy. Anticipating these changes is crucial for the European Union and its Member States in order to make progress towards sustainable development over the coming decades.

The disproportion of the working aged to elderly citizens is of most concern

At first glance, it might seem that population decline is a good thing when considering the rising global population. The EU would be in a better position to face the future with fewer consumers in need of resources, which would equate to less stress on the environment (for example less pollution)

and less pressure on dwindling supplies of natural resources and other raw materials. Additionally there would be less demand on the food resources needed to nourish the EU population. However, while a smaller population may seem to offer advantages, it is the growing imbalance in the age structure that is of most concern. While the increase in life expectancy is of course welcome, combined with low birth rates it can threaten economic growth as well as pension schemes and the provision of health care. As the average life expectancy of the EU population continues to rise, the working population will simultaneously become relatively smaller so long as the retirement age and the level of immigration are unable to compensate. Issues of sustaining growth and human well-being will thus come into question.

Economic strain may be placed on future generations

In the absence of net immigration and a raise in the retirement age, a lower fertility rate coupled with an ageing population will place strain on the social and economic well-being of future generations, unfavourably affecting their quality of life. Increased per-capita output will be needed to support the costs of national infrastructure and pensions ([2]). The EU and its Member States have the opportunity to utilise the time prior to any future budgetary problems caused by ageing to prepare and invest for these demographic changes. Balancing current costs against the benefits of the future may bring about political friction as the age structure varies considerably across the Member States ([3]).

Socioeconomic development and human well-being will become challenging for future generations

Preventing a relative shrinking of the labour force is a priority as it can also have implications on socioeconomic development. Equity within and across generations can be at risk if fewer people are responsible for contributing towards the welfare of the elderly. The sustainability of pensions will be of growing concern in coming decades as Member States must assure reforming social protection systems to cope with an ageing population ([4]). Issues of social inclusion can also be of concern, such as poverty amongst older citizens, as more individuals are collecting from a pension system which fewer workers are subsidising. The recent economic crisis has demonstrated the potential risks for all pension schemes. Concentrating on these risks and aiming for a balance between sustainability and adequacy can prove challenging ([5]). Healthcare can also suffer from an unbalanced proportion of older citizens to those working. As one of the more costly expenditures, the working aged population will be required to compensate the costs of healthcare for all citizens including the high numbers of elderly citizens who are likely to use the system. Governments must restructure healthcare for better efficiency at less cost to ensure social well-being for the future.

Changing the dynamics of the labour market for greater participation of older, female and migrant workers

Concern over changing demographics has sparked a number of policy debates covering a range of possible approaches. The most prominent options revolve around the restructuring of the labour force, an active family policy and pro-active economic and immigration policies. This would involve measures to increase the participation of older workers in the labour force, for example by raising the legal retirement age in line with the increase of life expectancy. The participation of women could be supported by better provision of childcare and schooling programmes for children. And EU labour markets could be made more attractive to qualified immigrants with skills which are in shortage. Lastly, Member States will need to reduce public debt at a satisfactory rate while at the same time raising employment rates and economic productivity.

Providing social services while maintaining low national deficits will be crucial

Preparing for the changes in demography within the European Union will require a vast amount of skill and proficiency. Expensive social services, welfare, healthcare systems and infrastructure will all need to be restructured to meet the demands of ageing citizens and a declining labour force. All this comes at a time when national budgets and austerity measures have become of great concern due to the financial crisis. As spending increased in many Member States from economic rescue packages, decreasing spending deficits is of high importance to ensure the stability of the European markets and to keep people in work.

([2]) This is dependent upon the type of state pension scheme. States which guarantee higher pensions will face more pressure to support the scheme.
([3]) Lindh, T. and Malmberg, B., 'European Union Economic Growth and the Age Structure of the Population', *Economic Change and Restructuring*, 2009, Vol. 42, No. 3, pp 159-187.
([4]) European Council, Review of the EU Sustainable Development Strategy (EU SDS) - Renewed Strategy, 2006, 10117/06.
([5]) European Commission, *Progress and key challenges in the delivery of adequate and sustainable pensions in Europe: A Joint Report on Pensions*, European Economy, Occasional Papers 71, November 2010.

Box 4.1: Objectives related to demography 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:

- Supporting the Member States in their efforts to restructure social protection in view of demographic changes.
- Significantly increasing the labour market participation of older workers.
- Encouraging a more pro-active environment for female participation in the labour market.
- Attracting the participation and integration of migrants into the work force.

Further reading on demographic changes

Commission staff working document, Demography report 2008: Meeting Social Needs in an Ageing Society, SEC(2008) 2911.

European Council and European Commission, *Joint Report on Social Protection and Social Inclusion 2010*, 6500/10

European Commission and Economic Policy Committee, '2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060)', *European Economy*, No 2, 2009

European Council, 'The Stockholm Programme: An Open and Secure Europe Serving the Citizen', *Official Journal of the European Union*, C 115, 4 May 2010

Joint Report on Pensions: Progress and key challenges in the delivery of adequate and sustainable pensions in Europe, *European Economy*, Occasional Papers 71, November 2010

Józwiak, J. and Kotowska , I.E., 'Decreasing Birth Rates in Europe: Reasons and Remedies', *European View*, No 7, 2008, pp 225-236

Lindh, T. and Malmberg, B., 'European Union Economic Growth and the Age Structure of the Population', *Economic Change and Restructuring*, Vol. 42, No. 3, 2009, pp 159-187

Muenz, Rainer, *Aging and Demographic Change in European Societies: Main Trends and Alternative Policy Options*, SP Discussion Paper: No 0703, 2007

Employment rate of older workers

From 2000 to 2010 the proportion of 55-64 year-olds in employment increased in the EU, however the 50 % target was not reached

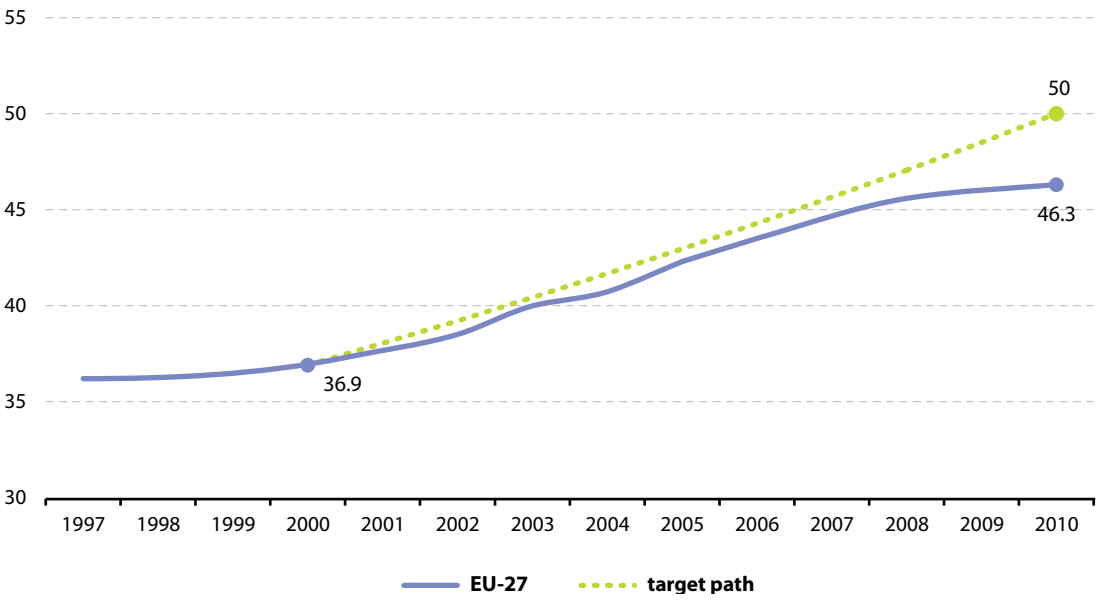
Commentary

The proportion of 55-64 year olds in employment rose from 36.9 % in 2000 to 46.3 % in 2010, at an average annual growth rate of 2.3 %. Yet this increase was not sufficient to reach the 2010 target rate of 50 %.

Nine out of 27 countries had achieved the 50 % employment target in 2010

There is considerable variation between Member States. Nine Member States have achieved the EU's 50 % target. Countries that had the largest percentage point increase from 2000 levels include Bulgaria, Germany and Slovakia. Two countries (Romania and Portugal) have lower levels of older worker employment in 2010 than in 2000. The discrepancy between countries may be attributed to a number of industrial and policy factors within individual Member States, such as different employment sectors, retirement ages and policy initiatives, including life-long learning to acquire new labour skills ([6]), whilst other countries subsidise their pension schemes to cover the additional costs of early retirement. Additionally work types – part-time or full-time employment – may also vary amongst Member States.

Figure 4.1: Employment rate of older workers, EU-27
(%)



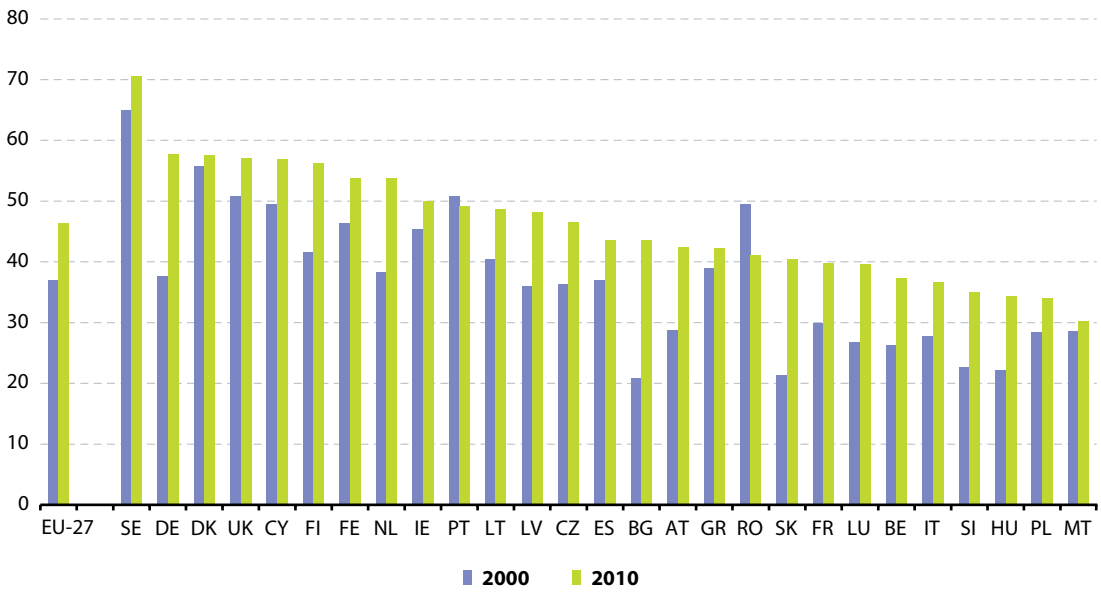
Period evaluated: 2000-2010
Distance to target path in 2010: -3.7 percentage points
Average annual growth rate: +2.3 % per year
Required annual growth rate: +3.1 % per year

Source: Eurostat (online data code: tsdde100)

([6]) Hartlapp, M. and Schmid, G., *Employment risks and opportunities for an ageing workforce in the EU*, Berlin, Wissenschaftszentrum Berlin für Sozialforschung (WZB), Discussion Paper SP 2008-105.

Figure 4.2: Employment rate of older workers, by country
(%)

Key figures in 2010:
Highest: Sweden with 70.5 %
Lowest: Malta with 30.2 %
Average EU-27: 46.3 %



Source: Eurostat (online data code: tsdde100)

Indicator relevance

The participation of older people in the labour market indicates, among other things, the adaptability of the EU labour market to the ageing of the population and addresses in part how to provide adequate pensions and social protection systems to the elderly, while also guaranteeing healthy public finances ([7]). Either people will need to retire at a later stage in life, pension contributions will need to be increased or pensions will need to be indexed with a demographic correction factor. Strategies to encourage a higher exit age from employment include lifelong learning schemes which provide workers with new skills demanded by the labour market.

The employment rate of older workers monitors the operational objective of the EU Sustainable Development Strategy of 'significantly increasing the labour market participation of women and older workers according to set targets'. 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.

Definition

The 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.

([7]) Joint Report on Pensions: Progress and key challenges in the delivery of adequate and sustainable pensions in Europe, see 'Further reading'.

Life expectancy at age 65

Life expectancy at age 65 in the EU for both men and women advanced steadily over the period 2002 to 2008

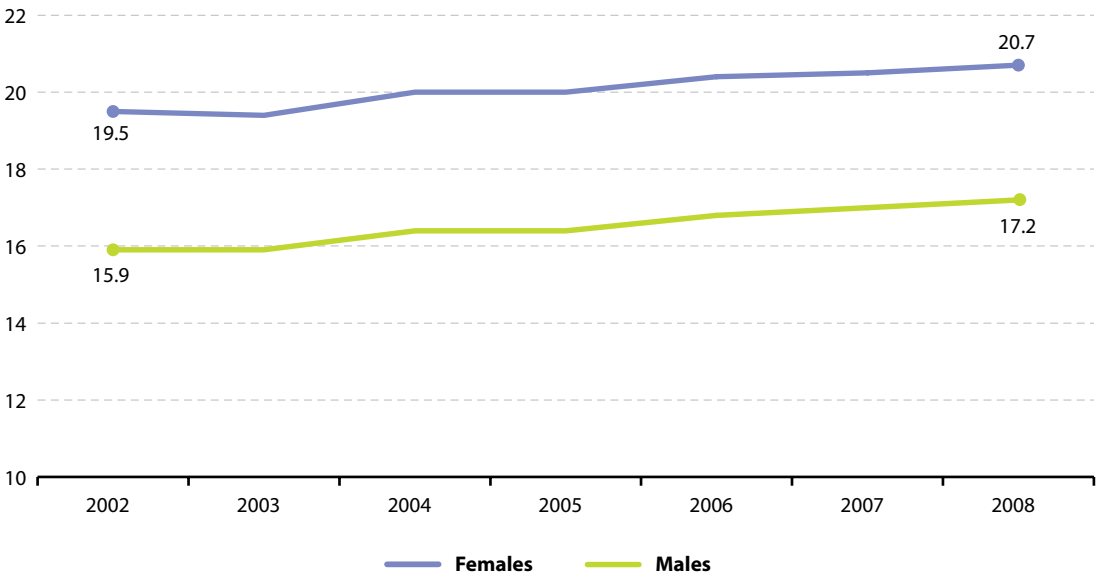
Commentary

Life expectancy continues to rise

Life expectancy for both males and females increased between 2002 and 2008. Females had a steady increase of their life expectancy after the age of 65, from 19.5 to 20.7 years. Male life expectancy also increased from 15.9 to 17.2 years. While male life expectancy still remained lower than females', the rate of increase for males was slightly higher, at 1.3 % per year, compared to 1.0 % per year for females.

Differences between Member States remain evident, and the eastern European counties in particular tend to have the lowest levels of life expectancy. This variation can be attributed to dissimilarities in living and working conditions amongst Member States. Life expectancy, however, is expected to increase in these Members States, as improvements are made in primary and preventive care in addition to removing barriers affecting accessibility to healthcare ([8]).

Figure 4.3: Life expectancy at age 65, by gender, EU-27
(years)



Period evaluated: 2002-2008
Average annual growth rates
Females: +1.0 %
Males: +1.3 %

Source: Eurostat (online data code: tsdde210)

Indicator relevance

The EU 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, in addition to longevity without major disabilities or diseases ([9]).

([8]) Joint report on Social Protection and Social Inclusion 2010, see 'Further reading'.
([9]) 2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060), see 'Further reading'.

The indicator also reflects challenges for the sustainability of public finances as a result of ageing populations. Increased life expectancy – without a change in retirement age – implies more demand for pensions, health and long-term care. This issue is particularly important in the future EU demographic context, since it is expected that the very old population group (80+) will grow faster than any other age group over the following decades.

Definition

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 of 65, if subjected throughout the rest of his or her life to the current mortality conditions (age-specific probabilities of dying).

Fertility rate

The average number of children borne to each woman in the EU increased between 2002 and 2008, moving closer towards the 2.1 children per woman needed to maintain the current population

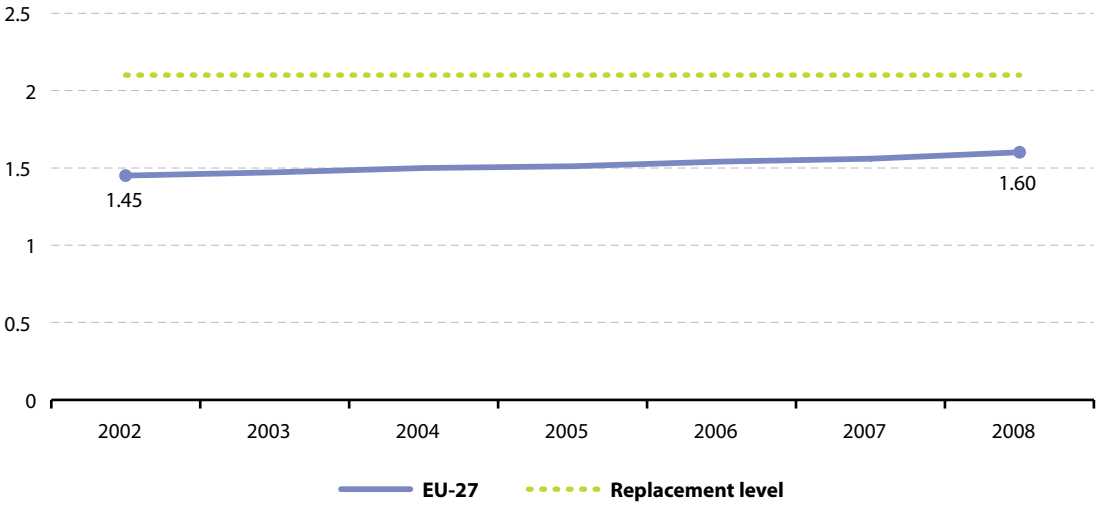
Commentary

Fertility rates have increased although they remain below the replacement level

Fertility rates provide information on population renewal through births within a given society. Between 2002 and 2007, the average fertility rate increased in the EU from 1.45 to 1.56 children per woman, which is well below the 2.1 children considered necessary to maintain the population in developed countries.

Fertility rates vary widely between the Member States. In 2009 Ireland had the highest rate (2.07), followed by France (2.0) and Sweden (1.94), whilst Hungary (1.32), Portugal (1.32) and Latvia (1.31) had the lowest ([10]). The differences between countries are due to a mixture of cultural and economic factors, such as educational level, labour market scenarios, material aspirations, social security arrangements and migration ([11]).

Figure 4.4: Total fertility rate, EU-27
(number of children per woman)



Period evaluated: 2002-2008

Average annual growth rate: +1.7 %

Distance to replacement level in 2008: -0.5 children per woman

NB: 2002 is a Eurostat estimate.

Source: Eurostat (online data code: tsdde220)

Indicator relevance

A fertility rate of 2.1 children per woman is considered necessary to maintain the population of developing countries at their existing levels, and is referred to as the replacement level. All other things remaining equal, a fertility rate below the replacement level will lead to a shrinking population and to a relative fall in the size of the working age population. Immigration could be an additional answer to a low fertility rate. On the other hand a fertility rate above the replacement level would provide a potential solution to the expected future unsustainability of pensions, health and long-term care expenditure. However, high fertility rates may lead to over-population and additional pressures on the environment and resource base.

([10]) 2009 data for Italy unavailable at time of publication.
([11]) *Decreasing birth rates in Europe: reasons and remedies*, see 'Further reading'.

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 net rate of migration into the EU increased slightly between 2000 and 2009

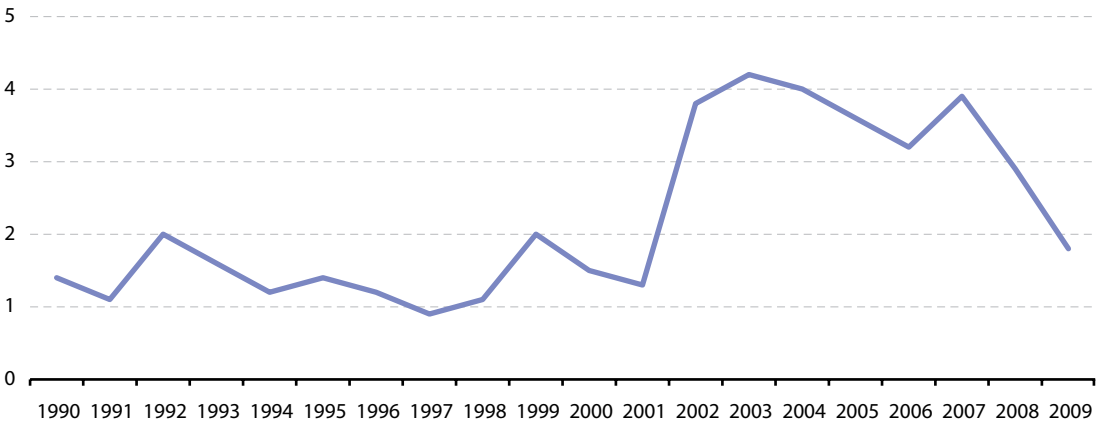
Commentary

The migration rate has increased between 2000 and 2009 from 1.5 to 1.7 immigrants per thousand inhabitants

Between 200 and 2009 net migration in the EU, the difference between immigration and emigration, increased from a level of 1.5 immigrants per thousand inhabitants in 2000 to 4.2 in 2003, followed by a decline from 3.9 in 2007 to 1.8 in 2009. This latest decline is probably related to the economic crisis, as fewer immigrants were able to find employment and left the EU.

The Member States with the largest net increases in migration in 2009 include Luxembourg, Sweden and Belgium with 13.2, 6.7 and 5.9 migrants per 1 000 persons respectively. Member States that experienced net losses include Ireland, Lithuania and Malta with -6.2, -4.6 and -3.8 migrants per 1 000 inhabitants respectively – where emigration was higher than immigration.

Figure 4.5: Crude rate of net migration plus adjustment, EU-27
(per 1 000 inhabitants)



NB: Break in series in 1998; data for 2009 are provisional.

Source: Eurostat (online data code: tsdde230)

Indicator relevance

Migrants who are economically productive contribute to the economy in terms of labour and taxes, but there is also a risk in relying too much on migrant workers to attain public finance sustainability. Economic and financial reforms, in particular labour market reforms leading to higher market participation, are essential to tackle financial strains generated by the current EU demographic context ([12]). Through the direction of the Stockholm Programme the EU Member States have agreed to a set of guidelines to converge country variations through policies including cooperation to satisfy labour market demands in addition to working more closely with non-EU countries to organise migration flows ([13]).

The EU Sustainable Development Strategy recognises the favourable contribution of a positive net migration to the challenge of demographic change. It also emphasises the need for developing migration policies that attract skilled foreign workers, strengthen integration and facilitate access to the labour market for migrants and their families. However, the migration rate is insufficient in itself to monitor these objectives and it is included as a contextual indicator, only providing background information helpful to an understanding of the topic.

([12]) Commission communication, *Green Paper 'Confronting demographic change: a new solidarity between the generations'*, COM(2005) 94.
([13]) *The Stockholm Programme: An open and secure Europe serving the citizen*, see 'Further reading'.

Definition

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 the total population change which is not attributable to births and deaths.

Elderly population compared to working-age population

The ratio of elderly people to the working age population in the EU has been constantly increasing until 2010 and is expected to continue to increase

Commentary

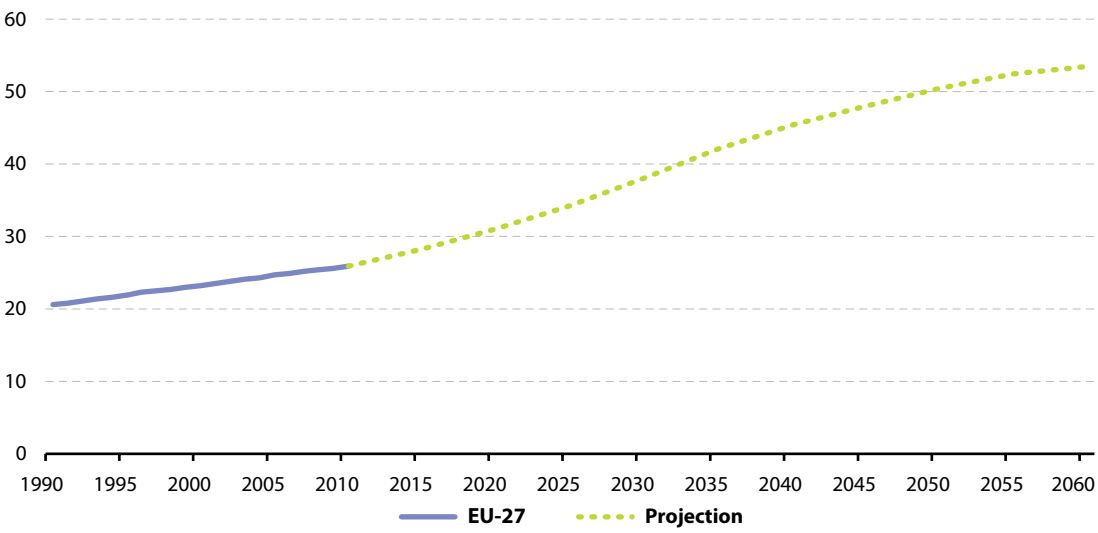
The old-age dependency ratio has steadily increased

The ratio is projected to double by 2060

The ratio of elderly people to the population of working age in the EU has steadily increased from 23.2 % in 2000 to 25.9 % in 2010. Projections indicate that the old-age-dependency ratio will continue to increase, reaching 53.5 % in 2060, or more than double the level of 2010 ([14]). The share of people aged 65 years or over in the total population is projected to increase from 17 % to 30 % by 2060.

The Member States with the highest old-age-dependency ratios in 2010 are Germany, Italy and Greece at 31.4 %, 30.8 % and 28.4 % respectively as these figures are projected to rise ([15]). In 2060 17 Member States are projected to have ratios larger than 50.0 %. Many of these countries are one of the 12 accession Member States whom have experienced a large increase in emigration of the working age population in recent years.

Figure 4.6: Old-age-dependency ratio, EU-27
(%)



Change over period 2000-2010:
Average annual growth rate: +1.1 %
Projected change over period 2010-2060:
Projected annual growth rate: +1.5 %

Source: EUROPOP2008 convergence scenario, Eurostat (online data codes: tsdde510, tsdde511)

Indicator relevance

The old-age dependency ratio reflects the balance between the elderly population and the population of working age. It provides a rough indication of the potential pressure that an 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. A high old-age dependency ratio can generate strain in payroll tax-funded pension systems, especially when coupled with relatively early retirement ages (estimated to cover around 20 % of the EU population aged 55-64 ([16]).

([14]) EUROPOP2008.
([15]) 2010 data the United Kingdom not yet available at time of publication.
([16]) Joint report on Social Protection and Social Inclusion 2010, see 'Further reading'.

The indicator is included as a contextual indicator, providing useful background information for monitoring the sustainability and adequacy of pensions in the context of demographic changes in the EU, which is recognised in the EU Sustainable Development Strategy as an important issue for the future. The old-age dependency ratio is estimated to be the dominant factor pushing public expenditure in the coming decades ([17]).

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) ([18]).

([17]) 2009 ageing report: Economic and budgetary projections for the EU-27 Member States (2008-2060), see 'Further reading'.
([18]) This is a static view of working age, as some governments within the EU are attempting to increase the retirement age above 65.

Income level of over-65s compared to before

The income level from pensions of people aged 65-74 relative to the income level from earnings of those aged 50-59 remained stable in the EU between 2005 and 2009

Commentary

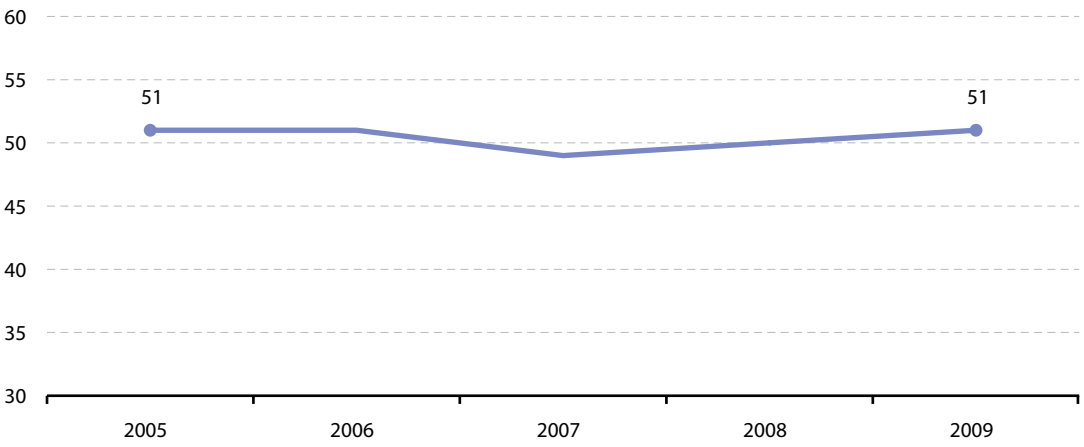
In 2009, the majority of Member States had aggregate replacement ratios below 50 %

The aggregate replacement ratio gives the average level of income pensioners aged between 65 and 74 receive in comparison to the average level of income of the working population in their 50s. Between 2005 and 2009 the aggregate replacement ratio for the EU remained stable at 51 % – meaning that pensioners have to live on roughly half the income of those just before retirement. In 2009 the ratio varied within Member States between 34 % and 68 %, with the highest ratios in France, Austria and Hungary, while the lowest ratios were in Bulgaria, Latvia and Cyprus. 15 Member States have ratios below 50 %.

Over the past decade some Member States have reformed their pension systems to prevent pension expenditure increasing as a share of GDP. Differences between Member States result from different demographic situations, including the old-age dependency ratio, and the extent to which Member States have reformed their pension systems. A risk still remains for those countries which have not done enough to compensate for the demographic changes which are expected to lie ahead ([19]).

Figure 4.7: Aggregate replacement ratio, EU-27

(%)



Period evaluated: 2005-2009

Average annual growth rate: +0 %

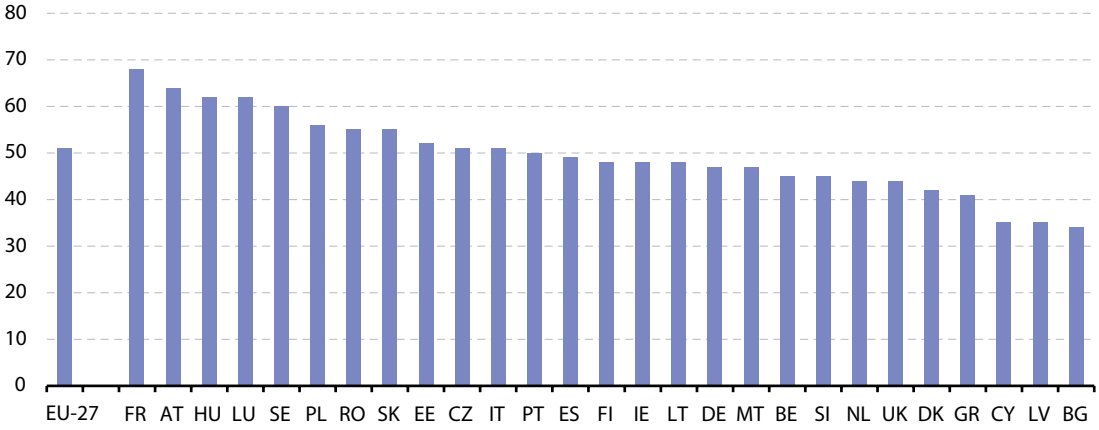
NB: 2005 and 2006 data are estimates.

Source: Eurostat (online data code: tsdde310)

([19]) *Progress and key challenges in the delivery of adequate and sustainable pensions in Europe*, see 'Further reading'.

Figure 4.8: Aggregate replacement ratio, by country, 2009
(%)

Key figures in 2009:
Highest: France with 68 %
Lowest: Bulgaria with 34 %
Average EU-27: 51 %



Source: Eurostat (online data code: tsdde310)

Indicator relevance

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 determines their risk of poverty and social exclusion. Differences in national and individual pension schemes can also account for income level variations between Member States and pensioners within Member States.

The EU 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.

Definition

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.

Risk of poverty for over-65s

The risk of poverty for elderly people in the EU decreased overall between 2005 and 2009. In 2009, less than one out of five people aged over 65 was at risk of being poor

Commentary

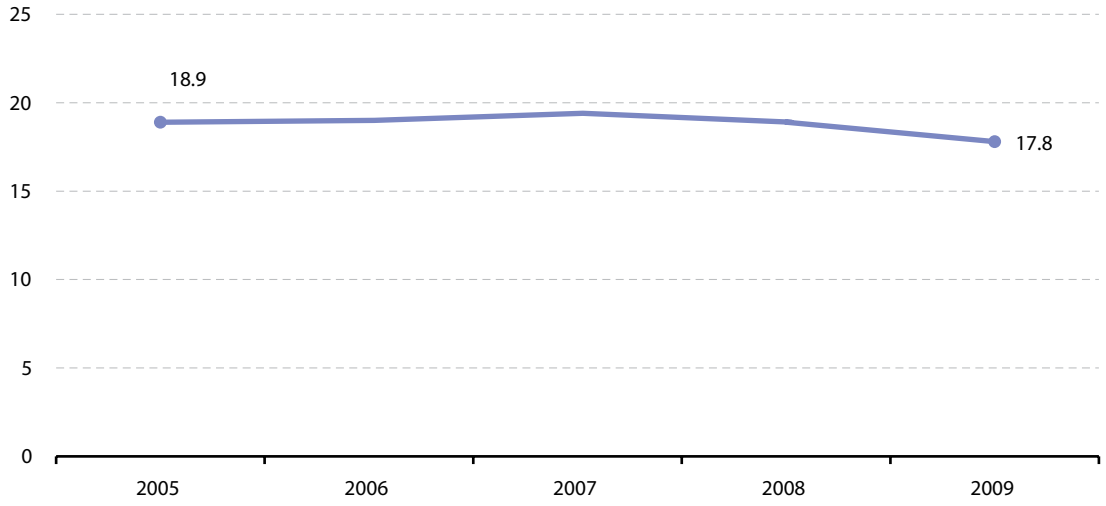
The proportion of individuals of more than 65 years of age who are at risk of poverty in the EU decreased by an average of 1.5 % per year between 2005 and 2009, falling to 17.8 % in 2009.

The risk of becoming poor varies significantly within EU Member States

In 2009 the at-risk-of-poverty rate for over-65-year-olds varied between Member States from 4.6 % to 48.6 % – Cyprus, Latvia, and Bulgaria having the highest rates of poverty of older persons, while Hungary, Luxembourg and the Czech Republic having the lowest. While current pensioners appear to have been protected against the economic crisis, the sustainability of future pensions may be affected by long periods of unemployment, lower contributions and poorer returns from the financial market stressing the need to restructure pension schemes to prevent future pensioners from facing poverty in old-age ([20]).

Figure 4.9: At-risk-of-poverty rate of elderly people, EU-27

(%)



Period evaluated: 2005-2009

Average annual growth rate: -1.5 %

Relative change: -5.8 % decline

Absolute change: -1.1 percentage points

NB: Data for 2005 and 2006, are Eurostat estimates.

Source: Eurostat (online data code: tsdde320)

Indicator relevance

The at-risk-of-poverty rate for persons aged over 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 sufficient wage levels during the working age, so as to generate adequate pensions.

([20]) *Progress and key challenges in the delivery of adequate and sustainable pensions in Europe*, see 'Further reading'.

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 equivalised income is calculated from the household income taking into account household size and composition.

Public debt

Changes in general government debt as a percentage of GDP in the EU moved away from sustainable public finance levels between 2000 and 2010, sharply deviating from the 60 % EU reference value

Commentary

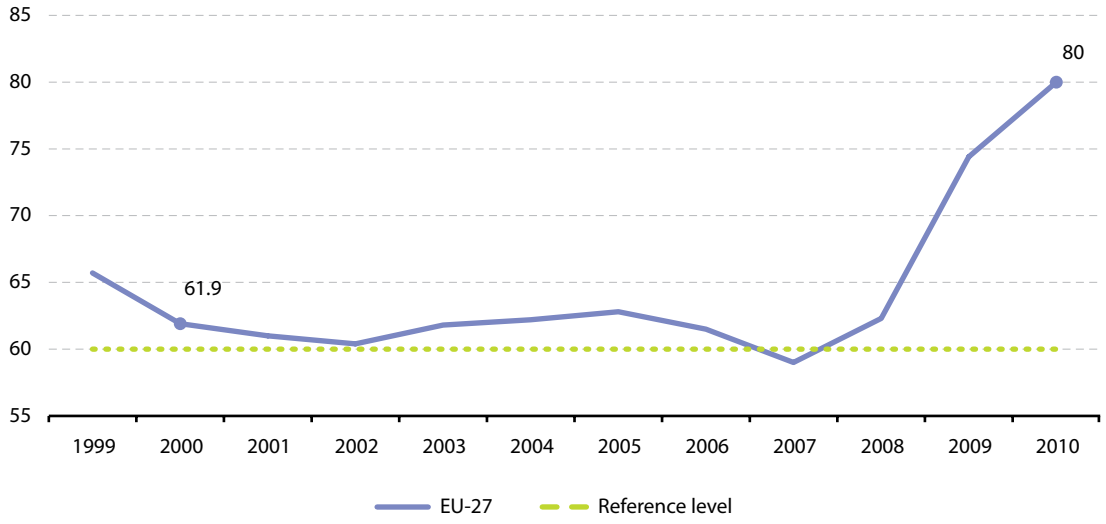
In 2010 the government debt of Member States ranged from 6.6 % to 142.8 % of GDP

The overall general government debt-to-GDP ratio in the EU rose over the period 2000 to 2010 from 61.8 % to 80.0 %. Only in 2007 did it fall below the euro-zone reference value of 60 % before rising to 80.0 % in 2010 due to the financial crisis when a number of Member States implemented stimulus packages in an attempt to buffer themselves against the effects of the global recession.

General government debt-to-GDP ratios within Member States in 2010 ranged from 6.6 % to 142.8 %, with Greece maintaining the highest level of debt and Estonia the lowest. Fourteen Member States remained above the 60 % euro-zone reference line. In the years running up to the financial crisis, those countries that faced the greatest deterioration in public finances had a mixture of external imbalances along with booming credit and domestic demand, while the countries that experienced the smallest had shown stable or falling macro-economic risks ([21]).

Over the period 2000 to 2010, general government debt-to-GDP ratios rose in more than two-thirds of the Member States (see Figure 4.11). Of the countries that were able to reduce their public debt, Bulgaria had the most pronounced decline (from 72.5 % in 2000 to 16.2 % in 2010). Much of this can be explained by introducing the time adjustment method of cash incomes when reporting taxes in accordance with Regulation (EC) No 2516/2000 ([22]).

Figure 4.10: General government debt, EU-27
(% of GDP)



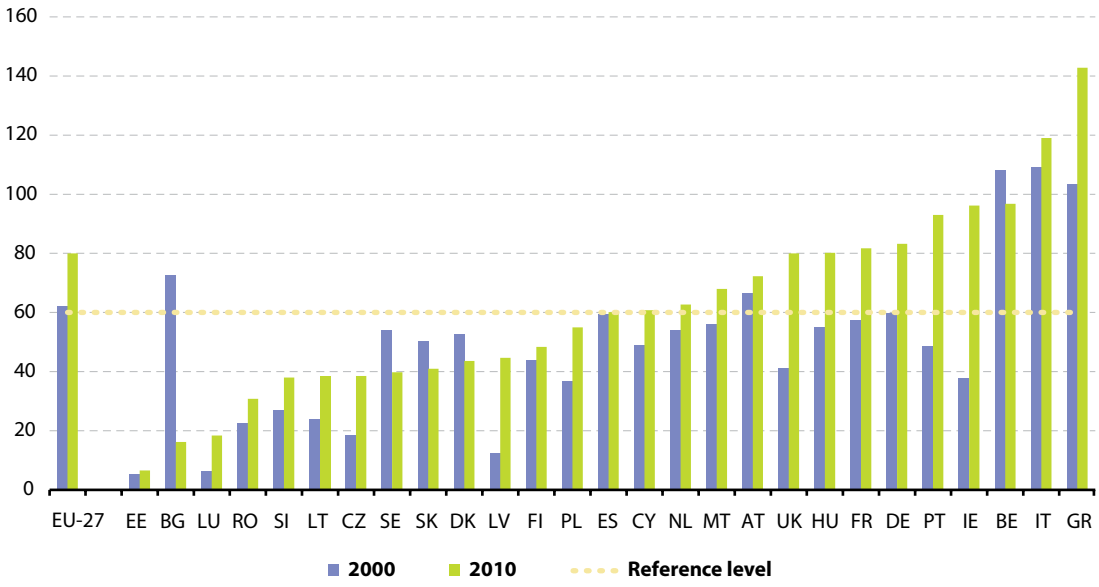
Period evaluated: 2000-2010
Distance to euro-zone reference line in 2010: +20 percentage points
Average annual growth rate: +2.6 %
Relative change: +29.4 %

Source: Eurostat (online data code: tsdde410)

([21]) European Commission, 'Public Finances in EMU-2010', *European Economy*. No 4/2010.
([22]) Deficit and Debt of General Government Sector in 2009, National Statistical Institute of the Republic of Bulgaria, Press release, 22 October 2010.

Figure 4.11: General government debt, by country
(% of GDP)

Key figures in 2010:
Highest:
Greece: 142.8 %
Lowest:
Estonia: 6.6 %
EU-27 average:
80.0 %



NB: 2001 data for SI instead of 2000.

Source: Eurostat (online data code: tsdde410)

Indicator relevance

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.

The EU 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, which is essential to meet the increasing needs of ageing populations and to promote economic growth. It is also essential to avoid handing down debts to future generations, the taxpayers of other nations or to expropriate bondholders through sovereign default.

Definition

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. Not all public debt is observable, as some countries have transferred debt to public entities – such as state-owned railways, airlines, motorways, banks, etc. – established under private law.

Retirement age

Between 2001 and 2009 the increase in the average retirement age in the EU has been too slow to reach an average of 65 years in 2010

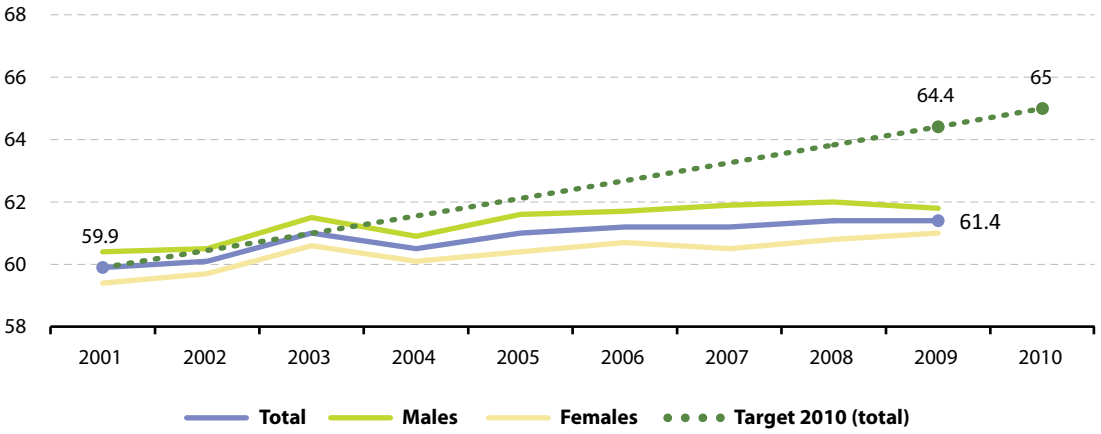
Commentary

The average exit age from the labour market in the EU increased very gradually between 2001 and 2009, from 59.9 to 61.4 years of age. Although this increase is positive it is insufficient to achieve the target of 65 years in 2010.

Men are closer to achieving the 2010 target level than women. In 2009, the average exit age for men was 61.8 years, while women on average left the labour market at 61.0 years. The variation of the average exit age for both men and women within Member States was between 64.3 years in Sweden and 58.8 years in Slovakia.

The target of delaying the average retirement age to 65 years by 2010 is unlikely to be achieved

Figure 4.12: Average exit age from the labour market, by gender, EU-27 (years)



Period evaluated: 2001-2009 (total)
Distance to target path in 2009: -3.0 years
Average annual growth rate: +0.3 %
Required annual growth rate: +0.9 %

NB: Estimated data weighted by the probability of withdrawal from the labour market.

Source: Eurostat (online data code: tsdde420)

Indicator relevance

The EU 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

In 2008 EU public expenditure on care for the elderly as a share of GDP remained at the same level as in 2000, although climbing in the intervening years

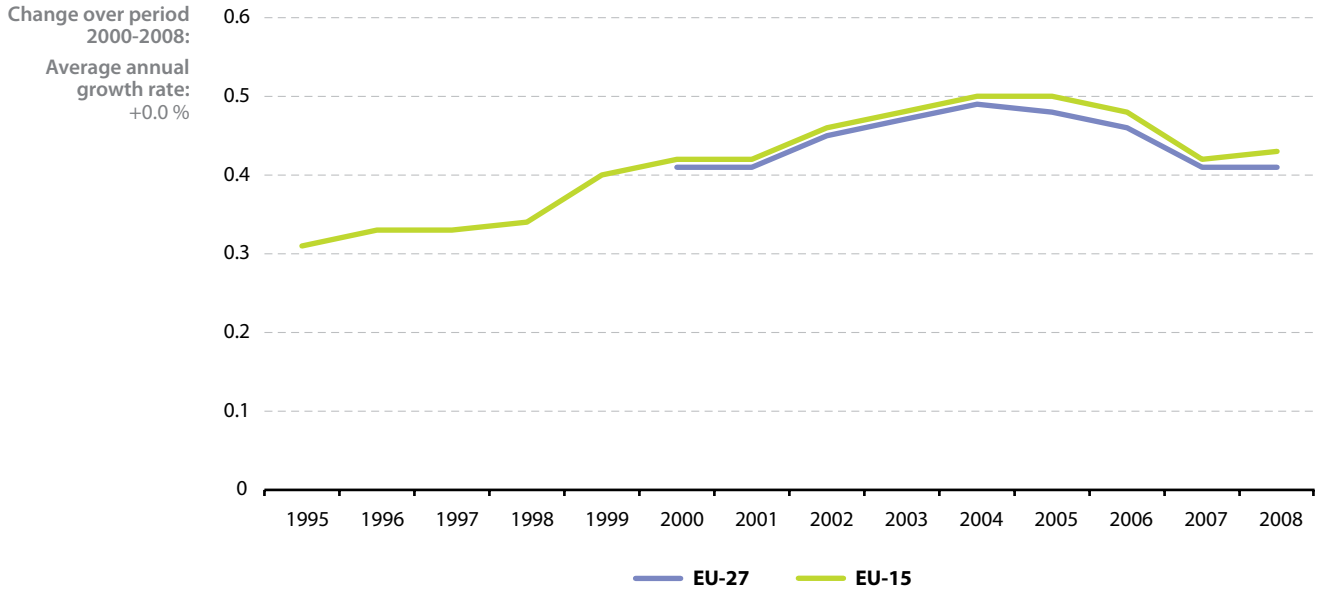
Commentary

Expenditure on care for the elderly in 2008 ranged from less than 0.01 % to 2.33 % in Member States

In the EU the share of social protection expenditure devoted to old-age care in GDP remained at 0.41 % in 2008, the same level as in 2000. This share did increase however over the intervening years to 0.49 % in 2004, but then fell back to the level of 2000 in 2007 and 2008. This decrease may be explained by the relatively strong GDP growth rate in a number of Member States including the Baltic countries during the economic upturn which lasted until 2007 ([23]), which would be compatible with consistent spending on care for the elderly.

Member States' expenditure on care for older people in 2008 varied from less than 0.01 % in Luxembourg and Cyprus to 2.33 % in Sweden, but was below 0.5 % in more than two-thirds of Member States. Only Denmark, Austria and Sweden spent 1 % of GDP or more on care for the elderly. Between 2000 and 2008 expenditures increased in the majority of Member States, although this did not lead to an increase in the EU aggregate because expenditures declined in Germany and the UK, two of the largest Member States.

Figure 4.13: Expenditure on care for elderly
(% of GDP)



NB: 2006-2008 data are provisional.

Source: Eurostat (online data code: tsdde530)

Indicator relevance

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 or from lower contributions being compensated by higher state spending.

([23]) See the indicator 'real GDP per capita' in the 'socioeconomic development' chapter.

Expenditure on care for the elderly monitors the relative level of financial resources required to provide social protection to older people, other than pensions, which can vary significantly by Member State. The indicator is linked to the need for ensuring that social services contribute actively to social inclusion, recognised in the EU Sustainable Development Strategy. It is included as a contextual indicator, providing background information helpful to an understanding of the topic.

Definition

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.

The impact of ageing on public expenditure

Age-related public expenditure in the EU is projected to rise from 23.1 % of GDP in 2007 to 27.8 % of GDP in 2060

Commentary

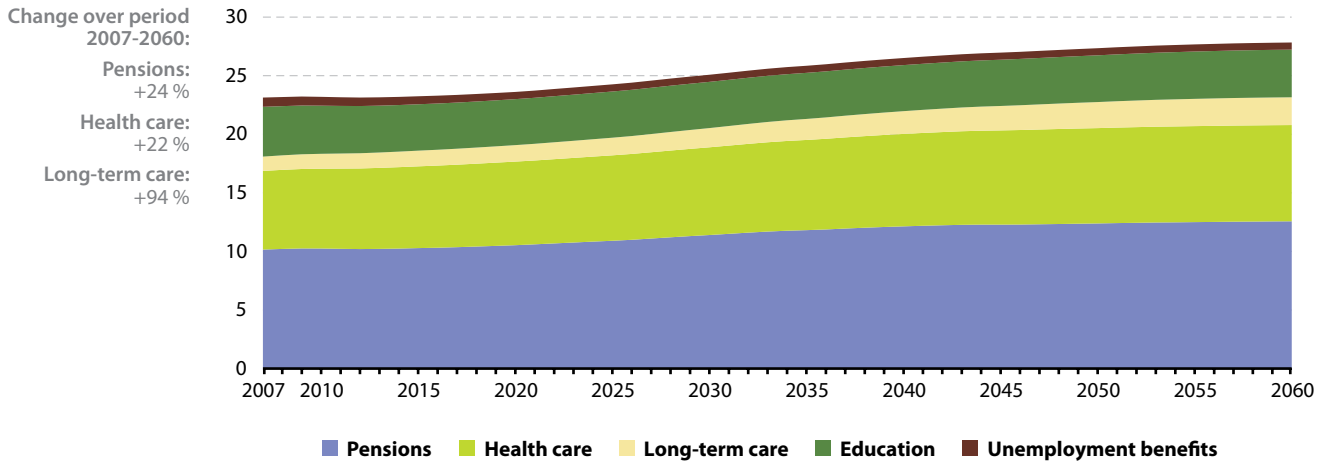
Whilst pensions expenditure is expected to increase in most countries, the relative level of income of over-65s is expected to increase only in some

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.

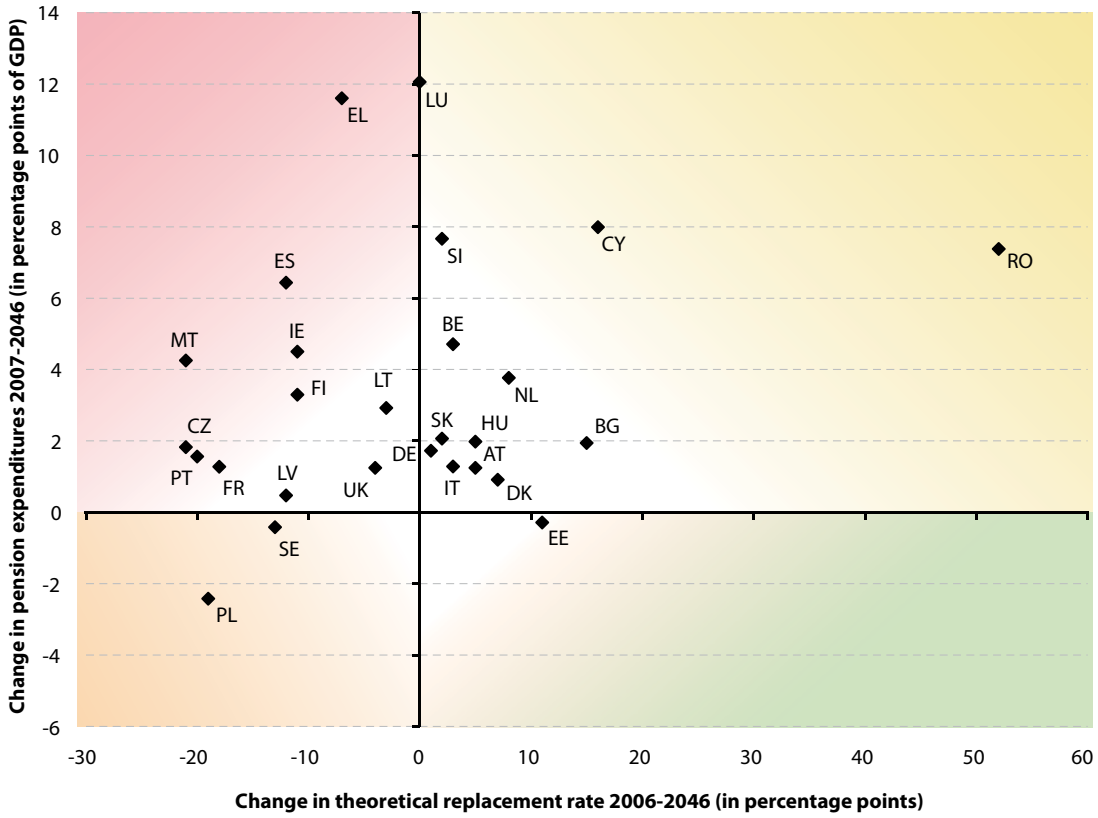
Changes in public pensions expenditure indicate the likely evolution of expenditure on pensions and changes in projected theoretical income replacement ratios indicate the likely income level of pensioners. Projections for the Member States indicate that more public expenditure in pensions will not necessarily result in higher income for pensioners. Whilst public pensions expenditure is estimated to increase in most EU countries, the level of income of pensioners relative to their income before retirement is estimated to increase only in 13 countries.

Figure 4.14: Projected evolution of EU-27 age-related public spending — baseline scenario (% of GDP)



Source: Economic Policy Committee, indicators sub-group (ISG) and working group on ageing populations (AWG).

Figure 4.15: Projected evolution of theoretical income replacement ratios and pension expenditures of public pension schemes



Higher income replacement ratio and lower pensions expenditure: Estonia

Higher income replacement ratio and higher pensions expenditure: Belgium, Bulgaria, Denmark, Germany, Italy, Cyprus, Hungary, Netherlands, Austria, Romania, Slovenia, Slovakia

Lower income replacement ratio and lower pensions expenditure: Poland, Sweden

Lower income replacement ratio and higher pensions expenditure: Czech Republic, Ireland, Greece, Spain, France, Latvia, Lithuania (Luxembourg), Malta, Portugal, Finland, United Kingdom

NB: Luxembourg, zero change in income replacement ratio.

Source: Economic Policy Committee, Indicators Sub-Group (ISG) and Working Group on Ageing Populations (AWG).

Indicator relevance

The EU 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 and are included as contextual indicators providing background information helpful to an understanding of the topic.

Definition

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.

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 rates 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 (although 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 the 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.

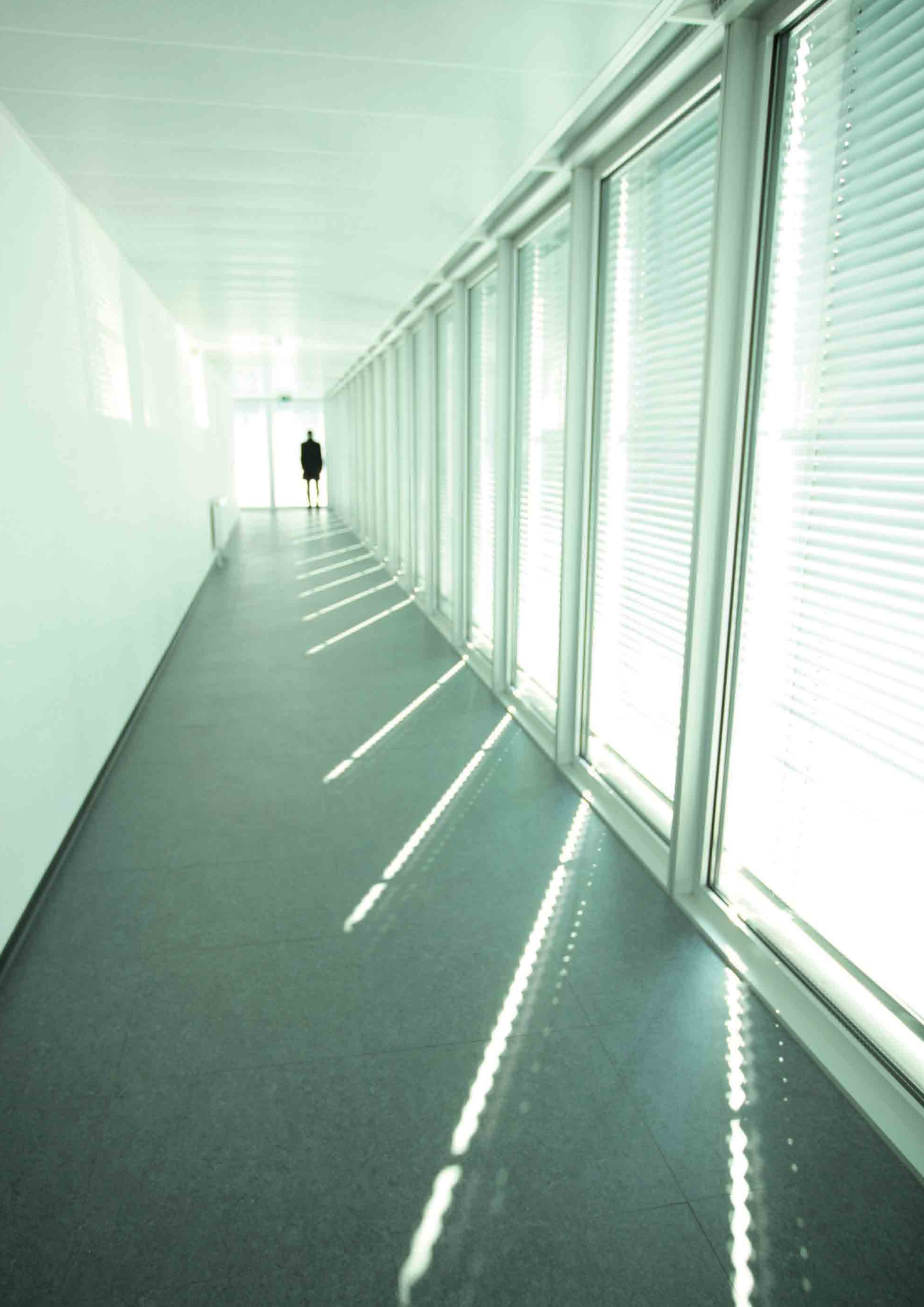
The impact of ageing on public expenditure

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.



5 Public health

'To promote good public health on equal conditions and improve protection against health threats' (overall objective of the EU Sustainable Development Strategy for the key challenge 'public health')

Overview of main changes

The developments in the public health theme since 2000 present a generally favourable picture. The headline indicator shows that in general people are living longer. Improvements are visible in the reduction of deaths due to chronic diseases, suicides, the production of toxic chemicals, annoyance by noise, and serious accidents at work. On the other hand, not all have benefitted from the improvements and there are still important inequalities in health and access to healthcare. Furthermore there remain challenges 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.

Table 5.1: Evaluation of changes in the public health theme *(EU-27, from 2000)* ([1])

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

(*) From 2002, based on life expectancy only.

(**) From 2002.

(***) From 2005.

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

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

Improvements in life expectancy demonstrate that there has been progress in promoting a healthier and longer life for EU citizens. Life expectancy at birth for men and women grew by 4 and 3 months per year respectively between 2002 and 2008. It is also apparent that the life expectancy of men is catching up with that of women.

Health and health inequalities

Fewer people die from chronic diseases or suicide. However the financial crisis has taken its toll on the middle aged

Improvements in health are apparent in several indicators. The death rate due to chronic diseases, which constitute the leading cause of premature deaths in the EU, fell by 2.0 % per year between 2000 and 2008 for people aged less than 65. Improvements in mental health, as reflected by changes in the rate of suicides, are also observable between 2000 and 2008. The overall EU suicide rate fell annually on average by 1.9 % among older teenagers and by 3.6 % among people aged over 85 years. The exception is the middle aged, where an increase in the suicide rate, which began in 2007, has been linked to the unemployment and indebtedness resulting from the financial crisis.

Despite improvements, cost associated with medical treatment still pose an obstacle to the poorest

Between 2005 and 2009 the proportion of people reporting unmet needs for healthcare fell for all income groups. Nevertheless, the proportion of the poorest who reported unmet needs for healthcare is still eight times higher than for the highest income group.

Determinants of health

Despite a fall in production of toxic chemicals, no shift towards lower toxicity

Production of toxic chemicals in the EU fell by 1.8 % per year on average between 2002 and 2009. However, there has been no change in their share of overall chemical production and no shift in the share of the most toxic classes of chemicals.

Exposure to air pollution did not really improve in urban areas

Exposure of the urban population to air pollution by particulate matter fell by 0.4 % per year but remains far away from the path to the 2010 target and exposure to ozone grew by 2.8 % per year between 2000 and 2008. It is however not possible to discern clear trends as these indicators fluctuate from year to year and changes in airborne concentrations are often the consequence of natural or semi-natural causes, such as forest fires and extremes of climate.

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

The share of the population in the EU declaring that they suffer from excessive noise favourably declined by an average of 1.5 % per year during the period 2005 to 2009.

Efforts to improve health and safety in work places have resulted in progress in the EU which is essentially consistent with the target of a 25 % reduction of serious accidents at work over the period 2007 to 2012.

Public health and sustainable development

Principle 1 of the Rio Declaration states that 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature' ([2]). It is thus apparent that public health constitutes a key goal for sustainable development.

Health is a key goal of sustainable development

Good health is the foundation of human welfare and productivity and is hence essential for sustainable development. Healthy people represent added value for the economy and the society since they are more productive and can contribute to cohesive ways of living together in the society. Sustainable development cannot be ensured in societies marked by widespread disease.

The society's state of health largely depends on health policy and the health system, especially health care resources, access to health care and financing. But health is also related to many other issues such as water supply and sanitation, road safety and safety of workplaces, income and education, air pollution, human settlements, etc. For these reasons health policy cannot be conceived of purely in terms of curative or preventive medicine. In fact integrated approaches are needed to ensure health and sustainable development. Beyond this, it is also necessary to take into account socio-economic factors in other areas of development policy since health to a considerable extent is determined by the socio-economic status of a community.

Health is related to many issues and requires integrated approaches

Protection from health threats is an explicit objective in the EU Sustainable Development Strategy (EU SDS) and covers related subjects such as food security and environmental pollution (see below). This chapter takes account of some important health threats like exposure to air pollution by particulate matter and by ozone, annoyance by noise or the production of toxic chemicals. These issues all influence the state of health by enhancing the risk of developing chronic diseases or mental health problems which are monitored in the sub-theme 'Health and health inequalities' of this chapter.

The state of health, as well as important determinants of health, are monitored in this chapter

There are also strong linkages between health and other themes of the EU Sustainable Development Strategy. First of all, health is affected by many of the environmental issues which are addressed in other themes such as sustainable consumption and production, climate change and energy, the management of natural resources and sustainable transport. For example emissions from industry and transport, the irresponsible use and disposal of chemicals and pesticides pose health threats through the air people breathe, the water they drink, and the food they eat. Secondly socio-economic development and social cohesion, leading to improved living conditions and reduction of inequalities, also greatly contribute towards better health. For poorer people cost may be an obstacle to them gaining access to health services and leading a healthy lifestyle. Furthermore people's social network constitutes an important health resource; socially included people benefit from the support of their environment. The stronger these networks, the more likely it is that members of a society will co-operate for mutual benefit. One last example of links between sustainable development and health include the impact of employment on mental health stability.

Health relates to many other issues of the EU SDS

([2]) United Nations, *Rio Declaration on Environment and Development*, United Nations Conference on Environment and Development, Rio de Janeiro, 1992.

Box 5.1: 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 a 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.

Further reading on public health

Commission on Social Determinants of Health, *Closing the gap in a generation: Health equity through action on the social determinants of health*, Geneva, World Health Organization, 2008

European Commission, *Major and chronic diseases: Report 2007*, Luxembourg, 2008

Commission *White Paper, Together for health: A strategic approach for the EU 2008-2013*, COM(2007) 630

Commission communication, *Solidarity in health: Reducing health inequalities in the EU*, COM(2009) 567

Eurostat, *Health statistics - Atlas on mortality in the European Union*, Luxembourg, Office for Official Publications of the European Communities, 2009

Eurostat, *Health and safety at work in Europe (1999-2007) – A statistical portrait*, Luxembourg: Publications Office of the European Union, 2010

Baert, K., and De Norre, B., Eurostat, *Perception of health and access to health care in the EU-25 in 2007*, Statistics in Focus 24/2009, Luxembourg, 2009

Life expectancy and healthy life years

Between 2002 and 2008 life expectancy at birth of women and men in the EU rose moderately. The faster growth rate for men indicates a closing of the gap in life expectancy between women and men

Commentary

Average life expectancy at birth in the EU is some six years higher for women than men. A girl born in 2008 is expected to live 82.4 years on average; a boy 76.4 years. For 65-year-olds, in 2008 there was an expectation of a further 20.7 years for women and 17.2 years for men.

Life expectancy at birth is six years higher for women than men, but the gap is closing

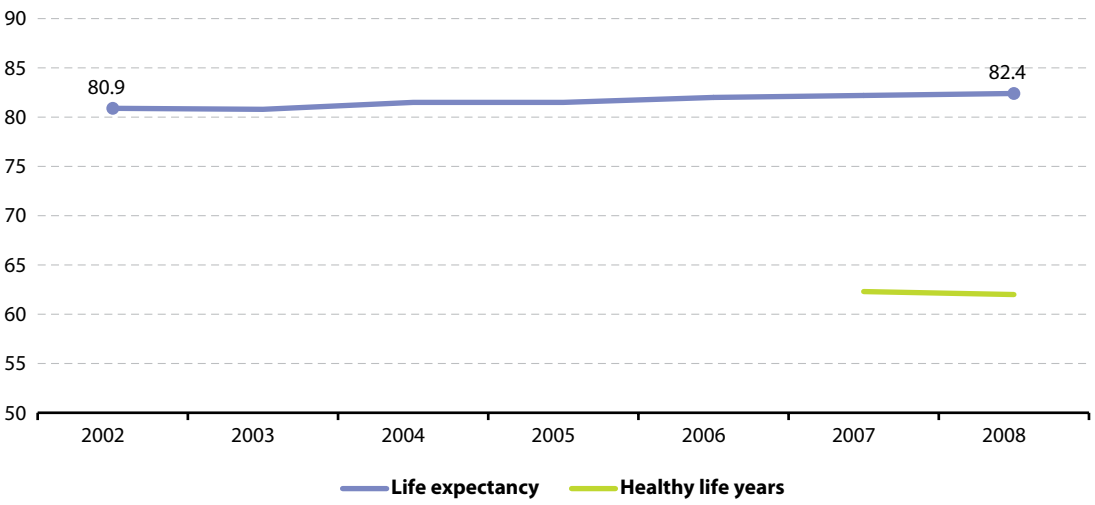
Over the period from 2002 to 2008 life expectancies at birth in the EU grew at an annual average rate of 0.3 % for women and 0.4 % for men (respectively 3 and 4 months per year). The growth rates at age 65 were somewhat higher, representing 1.1 % on average for women and 1.3 % for men. The different growth rates for women and men mean that the gap between the two sexes has narrowed.

Healthy life expectancy is generally stable

Due to the lack of sufficiently robust figures for healthy life years it is only possible to draw the overall conclusion that for the EU as a whole the situation is stable.

Figure 5.1: Healthy life years and life expectancy, EU-27
(years)

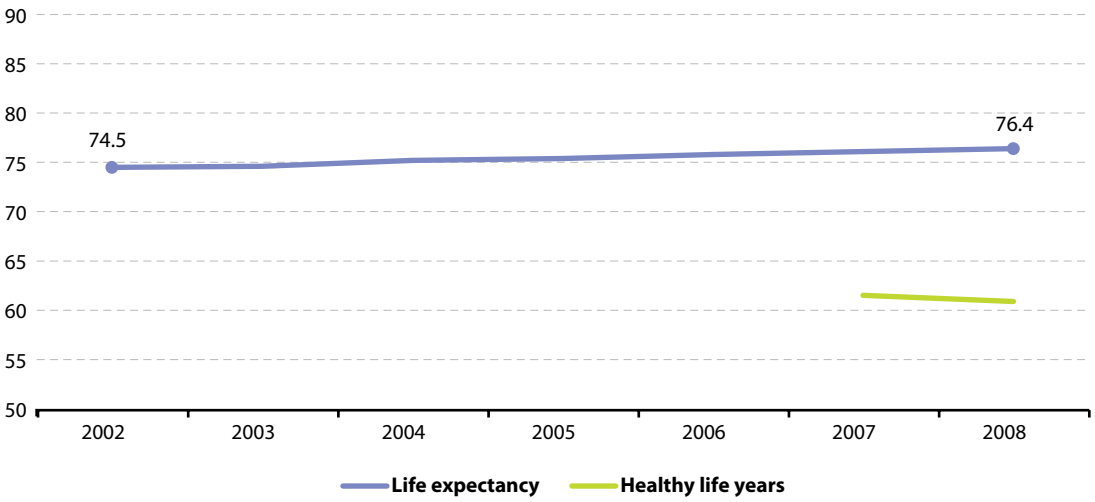
a) at birth – females



Period evaluated: 2002-2008 (life expectancy)
Average annual rate of change: +0.3 %
Relative change: +1.9 %
Absolute change: +1.5 years

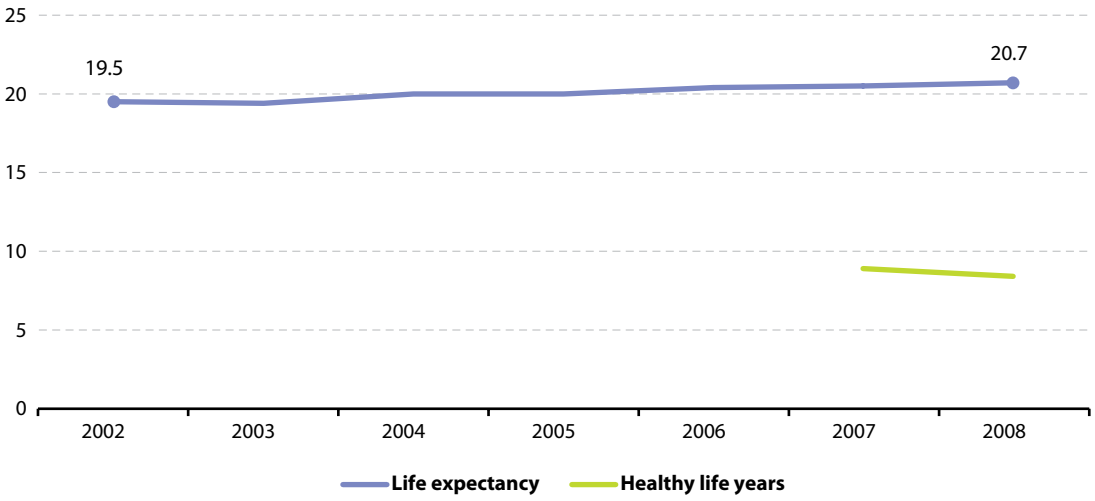
b) at birth – males

Period evaluated: 2002-2008 (life expectancy)
Average annual rate of change: +0.4 %
Relative change: +2.6 %
Absolute change: +1.9 years



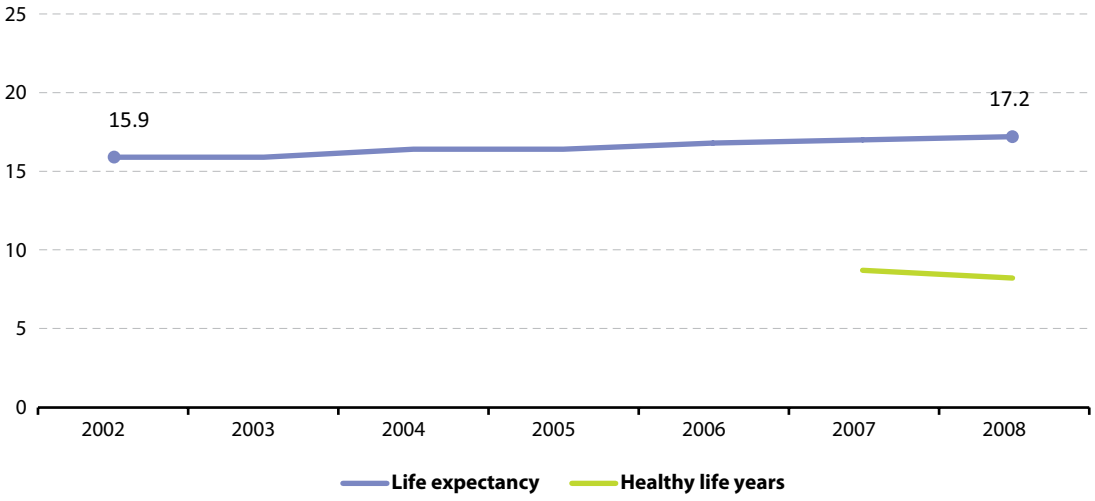
c) at age 65 – females

Change over period 2002-2008 (life expectancy):
Average annual rate of change: +1.0 %
Relative change: +6.2 %
Absolute change: +1.2 years



d) at age 65 – males

Change over period 2002-2008 (life expectancy):
Average annual rate of change: +1.3 %
Relative change: +8.2 %
Absolute change: +1.3 years

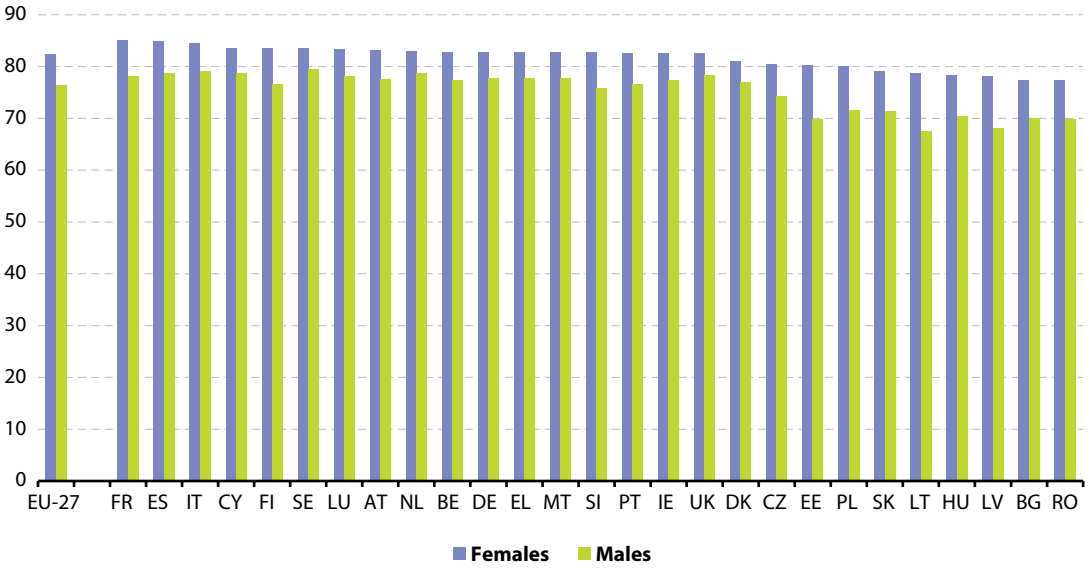


Source: Eurostat (online data codes: tsdph100, tsdph220)

Growing life expectancy reflects improved living conditions in the EU in terms of economic welfare, social security and health care resources. Nevertheless, there are differences between Member States. Some of the Central and Eastern European Member States tend to have shorter life expectancies mostly due to poorer socio-economic conditions in these countries, especially higher unemployment rates.

Life expectancy is lowest in most Central and Eastern European Member States

Figure 5.2: Life expectancy at birth by gender, by country, 2009
(years)



Key figures in 2009:

Highest:
Females: 85.0 years (France);
Males: 79.4 years (Sweden)

Lowest:
Females: 77.4 years (Romania);
Males: 67.5 years (Lithuania)

EU-27 average:
Females: 82.2 years;
Males: 76.0 years

NB: 2008 data for EU-27 and IT.

Source: Eurostat (online data code: tsdph100)

Indicator relevance

An improvement in healthy life years is considered as one of the main health goals for the EU. While life expectancy constitutes a conventional and solid indicator to reflect general health and health care conditions in different countries, the indicator of healthy life years adds complementary information on the of quality of life. 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 seeing health simply in terms of longevity to also considering well-being in terms of the absence of morbidity.

Note that the evaluation presented here refers exclusively to life expectancy, and excludes healthy life years. This is because there are only two years of data which are sufficiently robust to provide reliable information on the evolution at EU level over time. It is expected that account can be taken of healthy life years in the next edition of this report.

Definition

Life expectancy is defined as the mean number of years still to be lived by a person at birth or a certain exact age, if subjected throughout the rest of his or her life to the current mortality conditions.

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.

Deaths due to chronic diseases

Between 2000 and 2008 deaths due to chronic diseases fell considerably for under 65s in the EU

Commentary

Deaths due to lifestyle-inflicted chronic diseases have been decreasing steadily for many years

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 can be considered as premature and occur much less frequently than in the older population even if they account for nearly 60 % of all causes of death ([3]). Such deaths decreased by 2.0 % on average per year between 2000 and 2008. This trend has been steady for EU-15 countries since at least 1994 when the data series began.

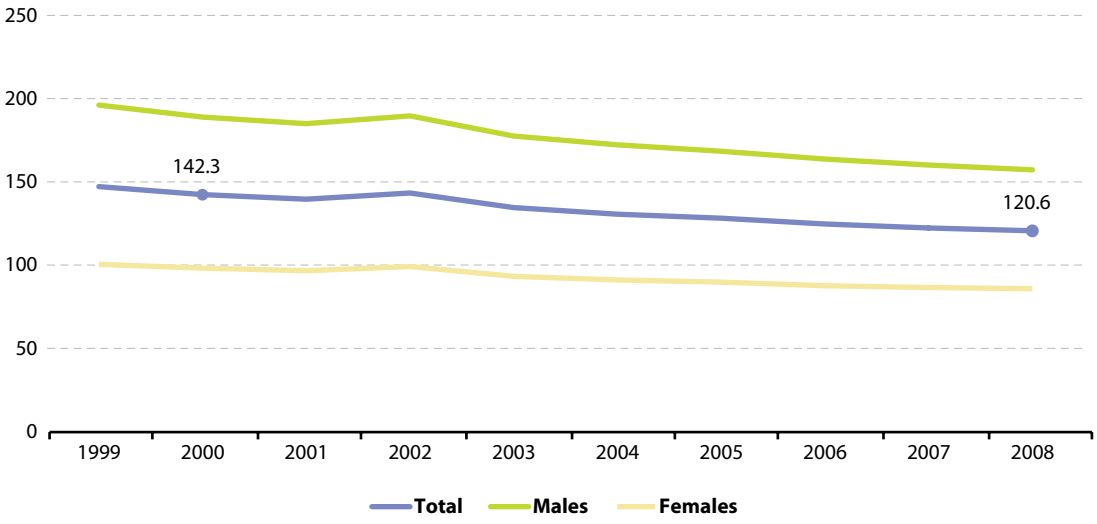
Chronic diseases are more common in men but decreasing at a higher rate than for women

Reasons for the improvement could be the increasing public awareness assisted by efforts at both national and EU level to promote healthier lifestyles, such as healthy eating, taking regular exercise, better managing stress and combating risk factors such as smoking and excessive alcohol consumption. Increasing efforts in implementing chronic disease management programs in primary care, which have been active now for almost 10 years in some countries, could be another reason.

Deaths due to chronic diseases are almost twice as common in the EU for men than for women, but the gap has slowly narrowed between 2000 and 2008 (average annual declines: men 2.3 %, women 1.7 %).

Figure 5.3: Death rate due to chronic diseases, by gender, population aged under 65, EU-27 (per 100 000 persons)

Period evaluated: 2000-2008 (total)
Average annual rate of change: -2.0 %
Relative change: -15.2 %
Absolute change: -21.7 deaths per 100 000 people



NB: provisional data.

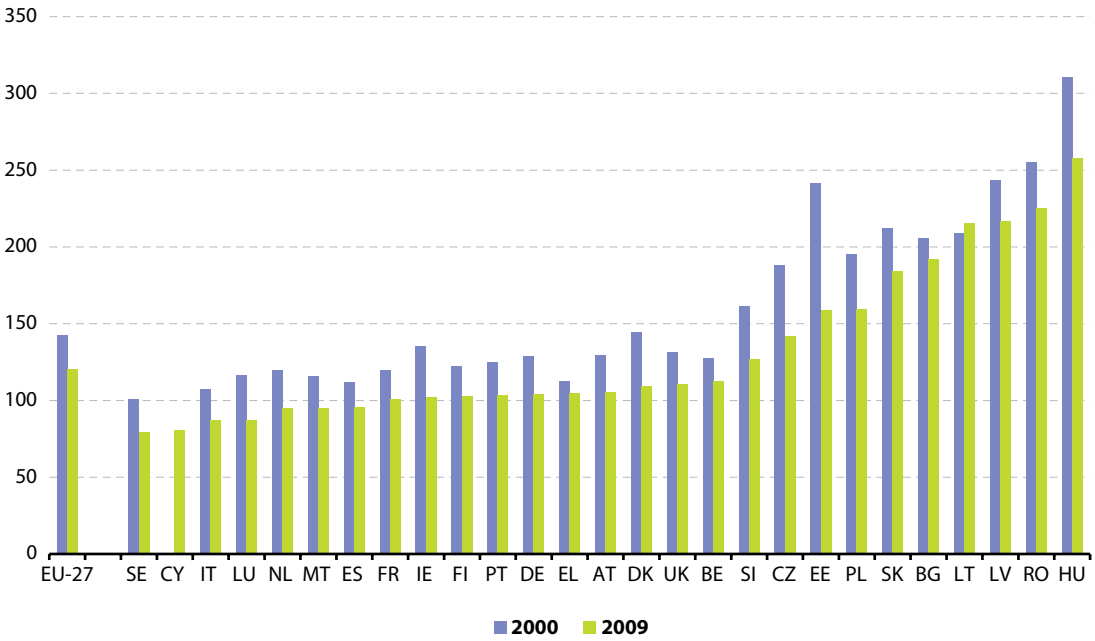
Source: Eurostat (online data code: tsdph210)

Differences remain between lower and higher income Member States

During the period 2000 to 2002 death rates rose in several Member States, as is particularly evident from the small peak in 2002. One reason for this short-lived phenomenon could be the economic downturn at that time ([4]). However, between 2000 and 2009, death rates due to chronic diseases have declined in almost all countries in the EU. Nevertheless in some lower-income Member States death rates due to chronic diseases remain high and still more than 150 people out of 100 000 people died from these diseases.

([3]) Source: Table 'Causes of death - Absolute number (Annual data) [hlth_cd_anr]' on Eurostat website.
([4]) See the indicator 'real GDP per capita' in the 'socioeconomic development' chapter.

Figure 5.4: Death rate due to chronic diseases, population aged under 65, by country (per 100 000 persons)



Key figures in 2009:

Highest:
Hungary: 257 deaths per 100 000 persons

Lowest:
Sweden: 79 deaths per 100 000 persons

EU-27 average:
121 deaths per 100 000 persons (2008)

NB: Data for BE refer to 1999 and 2005; for MT 2007 data have been used for 2009; and for EU-27, BG, ES, FR, IT, LU and UK, 2008 data have been used for 2009.

Source: Eurostat (online data code: tsdph210)

Indicator relevance

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. Particulate air pollution is also associated with premature mortality from cardiovascular disease and certain cancers. 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 EU Sustainable Development Strategy includes the objective of 'curbing the increase in lifestyle-related and chronic diseases'.

Definition

The death rate due to chronic diseases 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.

Suicides

Deaths through suicide in the EU declined substantially between 2000 and 2008. Progress is visible amongst the youngest and, most notably, oldest age groups

Commentary

Suicide is more common amongst men than women and amongst older age groups

Although cultural factors can influence the official rate of deaths by suicide, it may be considered an indicator of mental health. Overall, suicides in the EU declined by an annual average of 1.9 % between 2000 and 2008.

Suicide death rates vary between the sexes ([5]) and between age groups. Suicides 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 has been closing slowly.

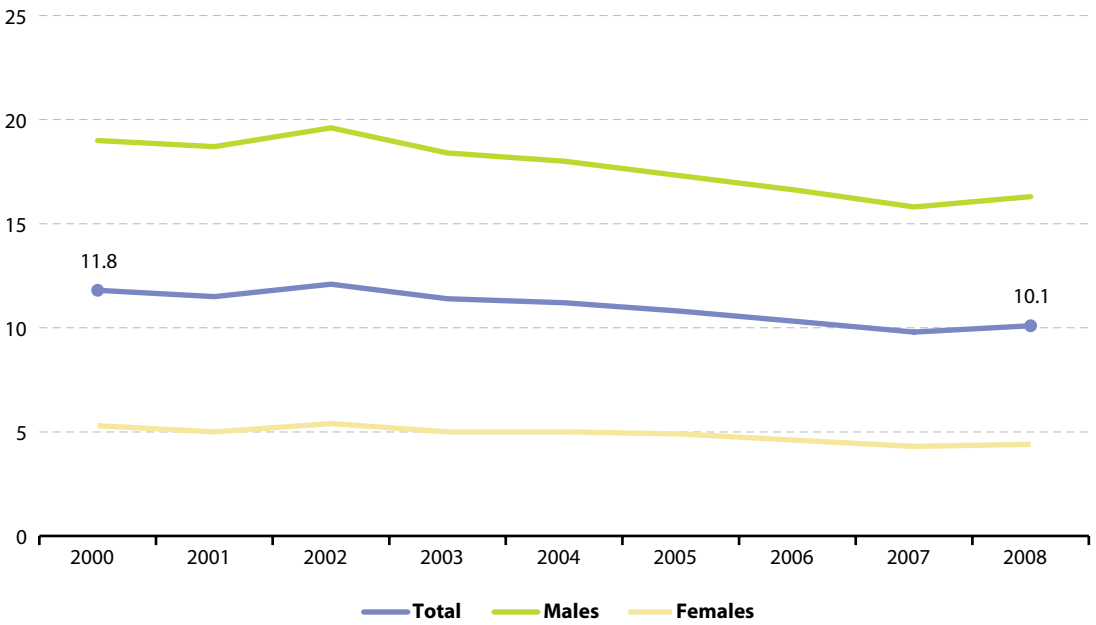
Economic crisis has had an impact on suicides among the working age group

Overall, since 2000 suicide rates fell in the young group aged 15-19 years by 1.9 % per year and in the oldest group aged over 85 years suicides by 3.6 % per year. On the other hand, there has been a slight increase in suicides of 0.1 % per year among people aged 50-54 years. This development has closed the gap between the older two age groups. However since 2006 the decrease in suicides of people over 85 years has slowed down while in the middle age group the increase in suicides has accelerated. The increase in the middle age group has been linked to the impact of the economic crisis on unemployment ([6]), which had already started to exert its negative effects in 2007 and 2008 ([7]).

Figure 5.5: Suicide death rate, EU-27
(per 100 000 persons)

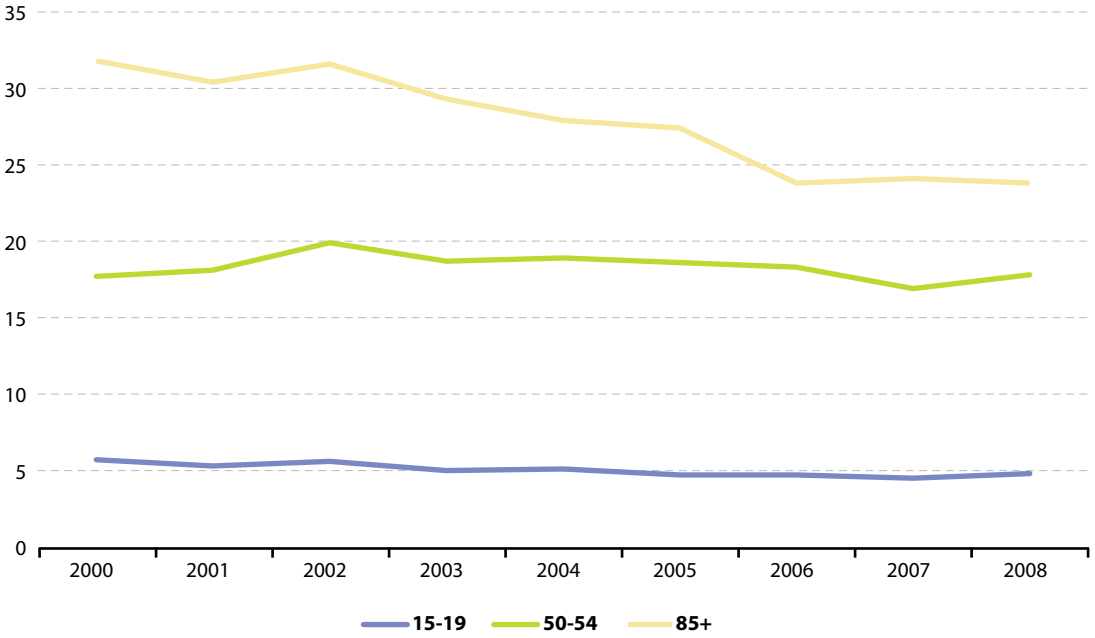
a) by gender (standardised death rate)

Period evaluated: 2000-2008 (total)
Average annual rate of change: -1.9 %
Relative change: -14.4 %
Absolute change: -1.7 suicides per 100 000 persons



([5]) Hawton, K., 'Sex and suicide: Gender differences in suicidal behaviour', *British Journal of Psychiatry*, Vol. 177, pp. 484-485.
([6]) Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., and McKee, M., 'The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis', *The Lancet*, Vol. 374, pp. 315-323, 2009.
([7]) European Commission, *Employment in Europe 2009*, Luxembourg, Office for Official Publications of the European Union, 2009.

b) by age group (crude death rate)



Change over period 2000-2008:
Average annual rates of change

Age group 15-19:
-1.9 %

Age group 50-54:
+0.1 %

Age group 85+:
-3.6 %

NB: provisional data.

Source: Eurostat (online data codes: tsdph240, hlth_cd_asdr)

Indicator relevance

Suicide is the major cause of death after chronic diseases and transport accidents. The suicide death rate is an indicator of mental health as suicides are an (rare and extreme) outcome of mental illness. One of the objectives of the EU Sustainable Development Strategy is 'improving mental health and tackling suicide risks'.

In general, suicide rates increase with age and the indicator is split here into three particular age groups: late adolescence, late middle age and the old. The breakdown of this indicator by gender and age-groups gives insights into inequalities between subgroups. 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).

Definition

This indicator is defined as the crude death rate from suicide and intentional self-harm per 100 000 persons, by age group. However, in the gender breakdown the standardised death rate is used.

Unmet needs for healthcare

The proportion of people in the EU reporting that they needed a medical examination or treatment but could not afford is higher in the lower income groups, which is indicative of inequalities in access to health care between socioeconomic groups

Commentary

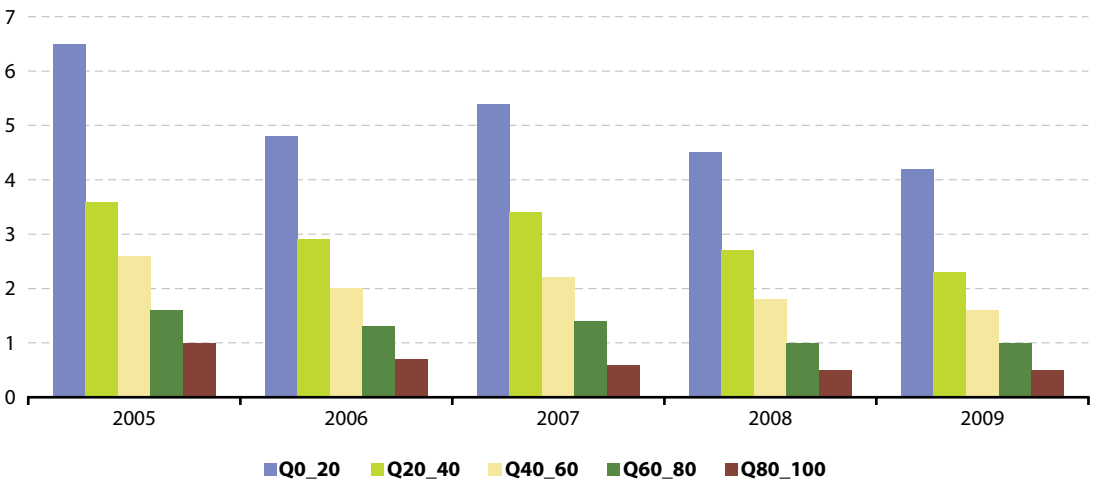
The cost of medical treatment is an obstacle to the poorest people in some Member States

This indicator highlights the inequalities in access to medical care across income classes. Only 0.5 % 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. Of the lowest income group over 4 % report that they are not always able to meet their needs for healthcare. The extent of this gradient across income groups varies considerably by country.

Between 2005 and 2009 the proportion of people reporting unmet needs for healthcare fell for all income groups. In addition, over the same period the gap between the lowest and the highest income group decreased. At the same time there has been an increasing trend of cost sharing by patients, in particular out-of-pocket payments which would be expected to put an increasing pressure on accessibility to health care, especially for low-income groups.

Figure 5.6: Self reported unmet need for medical examination or treatment, by income quintile, EU
(%)

Change over period 2005-2009
Average annual rate of change
Total: -10.8 %
Highest rate of change:
Q80-100: -15.9 %
Lowest rate of change:
Q20-40: -10.3 %



NB: for explanation of the legend see definition below.

Source: Eurostat (online data code: tsdph270)

Indicator relevance

The indicator shows inequalities in access to health care between income quintiles. Unequal access to health care leads to inequalities in health which has negative consequences for social cohesion and economic development. Evidence shows an increase in inequalities in health across the EU. Reducing health inequalities within and between Member States therefore is one of the objectives of the EU Sustainable Development Strategy. The Commission has recently laid down the framework for tackling health inequalities by focusing on reductions of economic and social disparities ([8]).

([8]) Commission communication, *Solidarity in health: Reducing health inequalities in the EU*, COM(2009) 567.

For several reasons the comparability of this indicator between countries is limited. One reason is that national questions might still not be completely harmonised. A second reason is that health care systems are different. A third reason is that it is always an individual subjective assessment and cultural effects and perceptions in countries can differ and shift in time if changes in the healthcare or social security system occur. As a result the indicator should be interpreted carefully and for this reason it is presented as contextual, providing background information helpful to an understanding of the topic, but without being evaluated.

Definition

This indicator is defined as the share of the population reporting that at least once in the previous 12 months they could not afford medical examination or treatment. The indicator is presented here 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. Income quintiles are recognised as the main indicator of socio-economic disparities.

Production of toxic chemicals

Between 2002 and 2009 the production of toxic chemicals decreased in the EU. The situation compared with 2002 is, however, completely due to significant reductions in 2008 and 2009

Commentary

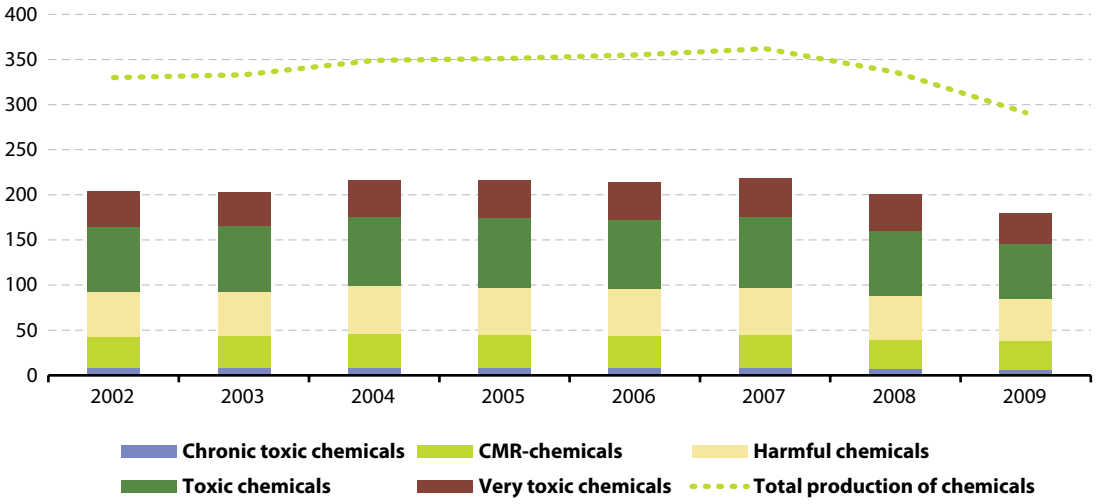
Production of toxic chemicals has decreased slightly since 2002 and there has been a shift towards less toxicity

Overall the production of toxic chemicals in the EU decreased by 1.8 % per year on average, between 2002 and 2009, although this decrease was entirely due to the drop in 2008 and 2009. Even if the two most toxic groups, the CMR-chemicals and the chronic-toxic chemicals, both experienced sharp drops in production, falling by 13.5 % and 25 % respectively between 2007 and 2009, their shares in production remained unchanged. The share of total toxic chemicals in the total production of chemicals also remained approximately the same at 62 %.

The decline in 2008 and 2009, which went against the trend of the previous years, is likely to be at least partly a result of the economic crisis, which led to a fall in industrial production. In addition, the regulation for the registration, evaluation, authorisation and restriction of chemicals (REACH) ([9]) which entered into force in June 2007, may also have contributed to a reduction in the production of chemicals.

Figure 5.7: Production of toxic chemicals, by toxicity class, EU-27 (million tonnes)

Period evaluated: 2002-2009 (all toxic chemicals)
Average annual rate of change: -1.8 %
Relative change: -11.8 %
Absolute change: -24 million tonnes



Source: Eurostat (online data code: tsdph320)

Indicator relevance

An objective of the EU 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 with suitable alternative substances or technologies. In this context, the recent adoption of the REACH regulation represents an important milestone. A regulation on the placing of plant protection products on the market ([10]) and a framework directive on the sustainable use of pesticides ([11]) came into force in 2009 which are intended to lead to significant reductions in the risks from pesticide production and use.

([9]) Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency.
([10]) Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market.
([11]) Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides.

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 in the EU was only slightly lower in 2008 than in 2000. Levels remained significantly above the target of 20 micrograms per cubic metre to be met by 2010 in the EU

Commentary

Exposure to airborne particulate matter has not decreased sufficiently to reach the 2010 target

Between 2000 and 2008 air pollution by particulate matter decreased by 0.9 micrograms per cubic metre, although given the substantial year-on-year variations it is difficult to discern any clear trend. The so-called first daughter directive ([12]), adopted in 1999, sets annual limit targets for 2005 and 2010 regarding the annual mean concentrations of particulate matter in micrograms per cubic metre. While the 2005 target of 40 micrograms per cubic metre was easily met, reaching the 2010 target of 20 micrograms will require strong reductions.

The main source of particulates in urban areas is from diesel-engined road vehicles, although industrial, public, commercial and residential combustion also contributes. The peaks in 2003 and 2006 were 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 ([13]). Furthermore the El Niño phenomenon might have had an impact on particulate matter concentration and contributed to the peaks in 2003 and 2006.

Urban exposure to particulates varies from country to country. In addition to sporadic wildfires, the Member States bordering the Mediterranean also suffer from dust blown from North Africa.

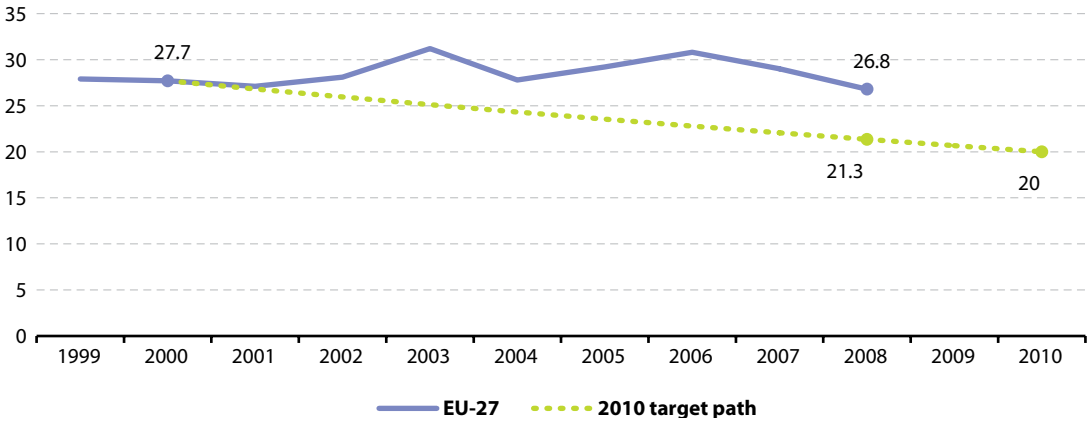
Figure 5.8: Urban population exposure to air pollution by particulate matter, EU-27 (micrograms per cubic metre)

Period evaluated: 2000-2008

Distance to target path in 2008: +5.5 percentage points

Average annual rate of change: -0.4 %

Annual rate of change required to meet 2010 target: -3.2 %



Source: European Environment Agency, Eurostat (online data code: tsdph370)

Indicator relevance

Particulate matter (PM10) comprises particles of less than 10 micrometers and can be carried deep into the lungs where it can cause inflammation and worsen the condition of people with heart and lung diseases. The major human source is combustion, and to a lesser extend abrasion. Natural sources include dust, sand and smoke from forest fires.

([12]) Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
([13]) 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. 4043-4064.

Although it is difficult to isolate the effects of particulates from other potential causes, there is now evidence for an association between long and short-term exposure to fine particulate matter and cardiovascular and respiratory diseases as well as some forms of cancer. A key objective of the EU 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.

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

Despite considerable variation observable from one year to the next, overall exposure to ozone in the EU increased between 2000 and 2008

Commentary

Exposure to ozone is generally rising, with two peaks in 2003 and 2006

Although exposure to ozone varies considerably from year to year, overall it rose at an annual average rate of 2.8 % between 2000 and 2008. The high exposure in the year 2003 is related to the heat wave in that summer ([14]). 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 show higher exposure levels than the cooler northern countries. 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.

Figure 5.9: Urban population exposure to air pollution by ozone, EU-27
(micrograms per cubic metre day)

Period evaluated: 2000-2008
Average annual rate of change: +2.8 %
Relative change: +24.3 %
Absolute change: +759 micrograms per cubic metre day

Source: European Environment Agency, Eurostat (online data code: 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 decreased lung function. Ozone formation is driven principally by emissions of nitrogen oxides (resulting from combustion, principally in transport and industry) and volatile organic compounds (emitted principally from vegetation) in the presence of sunlight.

The air quality framework directive ([15]), and the more recent first daughter directive on ambient air quality and cleaner air for Europe ([16]), describe the basic principles for the assessment and management of air quality. The third daughter directive ([17]) 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. This target cannot be monitored with the current indicator. However a

([14]) 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.
([15]) Directive 96/62/EC on ambient air quality assessment and management.
([16]) Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
([17]) Directive 2002/3/EC relating to ozone in ambient air.

study by WHO Europe has shown that current European policies may be insufficient to determine substantial health status improvements ([18]).

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.

([18]) World Health Organization, *Health risks of ozone from long-range transboundary air pollution*, Copenhagen, WHO regional office for Europe, 2008.

Annoyance by noise

Over the short period from 2005 to 2009 the share of people in the EU feeling annoyed by noise declined considerably

Commentary

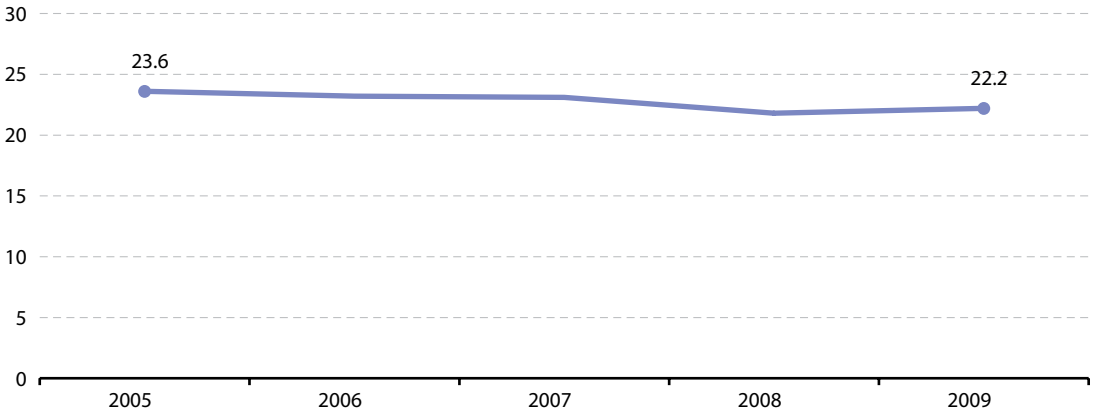
The share of population who feel annoyed by noise is favourably declining

Between 2005 and 2009 the percentage of the population who declared that they suffer from noise declined by 1.5 % per year on average. Possible explanations for this decline are closedowns of heavy industry, quieter cars resulting from EU legislation ([19]), and the replacement of tramways by subways and buses. Nevertheless there remain high levels of noise in working places, which is not measured by this indicator.

Available data for the country split shows that large reductions in noise annoyance have mostly been driven by eastern countries, which show higher levels of noise perceptions at the starting point and this fell dramatically in the following four years.

Figure 5.10: Proportion of population living in households considering that they suffer from noise, EU-27

(%)



Source: Eurostat (online data code: tsdph390)

NB: 2005 and 2006 data are Eurostat estimates.

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 can 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 and to minimise impacts on health' is an objective of the EU 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.

Note that this indicator relates to exposure to noise in residences and does not include exposure at the workplace or in transport to and from work which also result in public health problems.

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.) in their residences.

([19]) 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.

Serious accidents at work

The incidence of serious accidents at work decreased substantially between 2000 and 2008

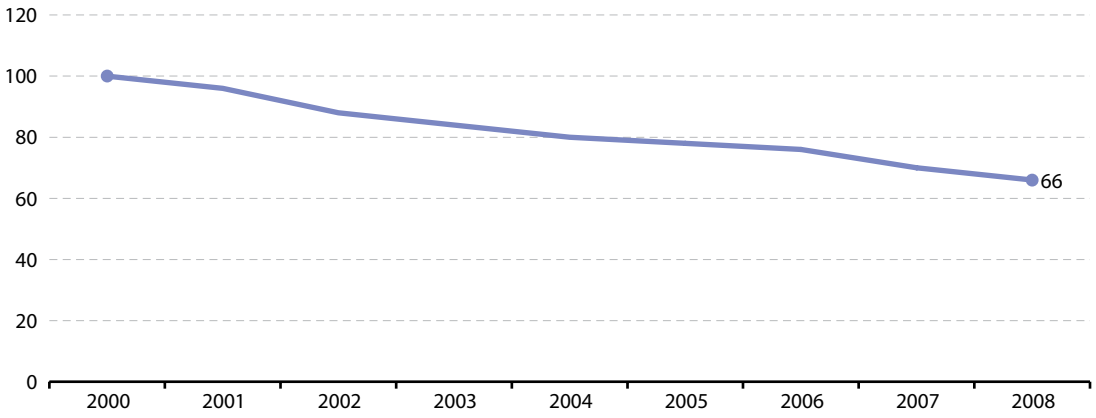
Commentary

The incidence of serious accidents at work decreased in the EU by 5.1 % per year on average between 2000 and 2008. This rate of decrease is slightly higher than that 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 the light of the decline in heavy industry in the EU and the increasing use of automation.

Serious accidents at work are still at a high level but on track to meet the target for 2012

Despite this strong downward trend, serious accidents at work remain at a high level, and in 2008 there were about 3.7 million serious accidents at work in the EU-15 countries.

Figure 5.11: Serious accidents at work, EU-27
(index 2000 = 100)



Source: Eurostat (online data code: tsdph400)

NB: 2007 and 2008 data are Eurostat estimates.

Indicator relevance

In some cases, serious accidents at work may cause high rates of lost productivity, but 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 ([20]) is to reduce by 25 % the total incidence rate of accidents at work per 100 000 workers in the EU over this period. Under the Lisbon Strategy, the Member States acknowledged the major contribution that guaranteeing quality and productivity at work can play in promoting economic growth and employment. Furthermore the impact of work-related health hazards on the young has also been recognized even earlier and remains a founding principle of policies in this field ([21]).

Definition

The indicator 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. Fatal accidents are not included.

([20]) Commission communication, Improving quality and productivity at work: Community strategy 2007-2012 on health and safety at work, COM(2007) 62.
([21]) Directive 94/33/EC on the protection of young people at work.

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.

The accuracy and the comparability over time vary from country to country due to the different sources used, the use of estimation techniques and the gradual improvement towards the harmonised question used in the EU Statistics on Income and Living Conditions (EU-SILC), in which the 'unhealthy' condition is defined as the limitation of a person's normal activities for at least the previous six months due to health problems. For the period 1995-2001 the source was the European Community Household Panel (ECHP) for most EU-15 countries. For 2002 and 2003 extrapolation techniques were applied. In 2004 most EU-15 countries started with the EU-SILC. In 2005 all EU-25 countries applied the EU-SILC, but in some cases the question used in national questionnaires was not yet stable. This situation improved for 2006-2007. From all these issues it is obvious that evaluating a trend over more than a few years is not possible. The comparability between countries is not only hampered by those methodological changes, there is also the cultural effect and the peculiarities of translated questions which are not totally comparable with the standard question and so not comparable between all countries.

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.

Death rate 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 (with the relevant ICD codes shown in parentheses): malignant neoplasms (C00-C97), diabetes mellitus (E10-E14), ischaemic heart diseases (I20-I25), cerebrovascular diseases (I60-I69), chronic lower respiratory diseases(J40-J47) and chronic liver disease (K70, K73-K74). 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-10codes 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 Union statistics on income and living conditions (EU-SILC), 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 household members over 16 years of age

within the national territory at the time of the data collection. 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'.

Respondents are asked: 'Was there any time during the last twelve months when, in your opinion, you personally needed a medical examination or treatment for a health problem but you did not receive it?' If responding 'yes' they are then asked about the reasons for the unmet need.

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 Commission 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^3].

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 Commission 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 m3 [in $(mg/m^3)\cdot day$]

Annoyance by noise

The data source is the European Union Statistics on Income and Living Conditions (EU-SILC). The reference population is private households as well as current members over 16 years of age within the national territory at the time of the data collection. 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'.

Serious accidents at work

The harmonised data on accidents at work are collected in the framework of the European statistics on accidents at work (ESAW). The data refer to accidents at work resulting in more than three days' absence from work (serious accidents). 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.


CFL
2011
2011

Climate change and energy

6

'To limit climate change and its costs and negative effects to society and the environment' (overall objective of the EU Sustainable Development Strategy for the key challenge 'climate change and clean energy')

Overview of main changes

For the majority of the climate change and energy indicators progress since 2000 has been good, particularly in the second half of the decade, while unfavourable trends continue for only a small number of indicators. Although the transformation to a low-carbon economy is already reflected in some indicators the economy of the EU remains energy- and carbon-intensive and most indicators in this theme are closely linked to economic growth. It is therefore to be expected that the economic crisis has had a considerable impact on the issues discussed in this chapter. On the whole, the changes in trends over 2008 and 2009 are not the result of profound, structural changes but rather a temporary interruption of longer term trends.

Table 6.1: Evaluation of changes in the climate change and energy theme *(EU-27, from 2000)* ([1])

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

(*) From 2006.
(**) From 2004.

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Greenhouse gas (GHG) emissions in the EU-27 declined between 2000 and 2009, and the pace is likely to be sufficient to meet the 20 % reduction target by 2020. The EU-15 is also on track to meet the collective Kyoto Protocol target of reducing GHG emissions by 8 % below 1990 levels in the commitment period 2008 to 2012. Similarly, the EU is on the way to reach the target of 20 % share of renewables in gross final energy consumption by 2020.

Favourable developments can also be seen for the greenhouse gas intensity of energy consumption, the use of renewable energy in transport, and combined heat and power. In contrast, the 2010 target of a 21 % share of renewables in electricity production is unlikely to be met even though the share rose between 2000 and 2008. The EU's dependence on energy imports ([2]) has grown considerably since 2000, with about 54 % of energy consumption being met by imports from outside the EU. The implicit tax rate on energy has fallen since 2000, which is inconsistent with the EU objective of shifting the tax burden from labour to resource use.

Headline indicators

EU-27 on track to meet 2020 reduction target in GHG emissions and EU-15 Kyoto commitments are likely to be met

In 2009 EU-27 GHG emissions stood 17.4 % below their 1990 levels. This makes it likely that the target of reducing GHG emissions by 20 % by 2020 will be met. Furthermore in 2009, EU-15 GHG emissions stood 12.7 % below their Kyoto baseline value. Thus the EU-15 countries are likely to overachieve their collective Kyoto commitment of reducing GHG emissions by 8 % in 2008-2012.

EU on track to meet its target for renewables in energy consumption

Due to changes in methodology, data for the second headline indicator 'consumption of renewables' are only available for 2006 to 2008. If the current pace of change over this short period is maintained, the EU is likely to meet the target of reaching a 20 % share of renewables in gross final energy consumption set for 2020.

Climate change

Whilst the share of emissions from manufacturing and construction and industrial processes have fallen, the share of emissions from transport has increased

With some notable exceptions, the proportions of total GHG emissions emitted by each of the main source categories (excluding international bunkers and land use, land use change and forestry) in the EU-27 have changed rather little between 1990 and 2009. The main changes have been reductions from manufacturing industries and construction (from 14.8 % to 11.5 %) and from industrial processes (from 8.3 % to 7 %) as well as, most notably, an increase from 13.8 % to 20.2 % from transport. Changes in the shares emitted by other categories have been minor.

The greenhouse gas intensity of energy consumption decreased moderately between 2000 and 2009, albeit at a slower pace than during the 1990s. The switch to lower carbon fuels is mostly responsible for the decrease.

2001-2010 was the warmest decade ever recorded

Between 2001 and 2010, the average global surface temperature was 0.46 °C above the 1961-1990 mean, making the decade the warmest ten-year period ever recorded. This follows the trend in temperature where the 2000s were warmer than the 1990s, which were warmer than the 1980s and earlier decades.

Energy

EU imports more than half of its energy

The EU's dependence on imported energy remained rather constant at around 45 % in the 1990s. However, between 2000 and 2009, energy dependence increased substantially, reaching 53.9 % in 2009.

Energy demand in the EU has fallen slightly since 2000

Energy demand in the EU has fallen slightly. After increasing steadily during the early 2000s, it fell between 2006 and 2009. In general, decreasing consumption of solid fuels has been compensated for by greater use of natural gas and, to some extent, renewable energies.

([2]) Fuel needed for producing nuclear energy is not counted in energy imports.

The share of renewables in EU electricity production grew from 13.8 % in 2000 to 16.7 % in 2008. Despite the increase, the EU is unlikely to meet the 21 % target set for 2010. In contrast, the share of renewables in transport rose rapidly between 2006 and 2008 to 3.5 % of transport fuels. If the current growth rate were to continue, the EU would meet the 5.75 % target set for 2010. However, given that data only cover three years, this must be treated with caution.

The EU is likely to miss its target for renewables in electricity, but is on track to meet its target for renewables in transport

The development of cogeneration or combined heat and power (CHP) which combines the production of useful heat with electricity generation has been steady but slow, reaching a share of 11.4 % of gross electricity generation in 2009.

Modest progress in cogeneration

The EU's implicit tax rate on energy fell between 2000 and 2009. The decrease in the effective tax burden is inconsistent with the EU objective to shift taxation from labour onto resource and energy consumption as a policy tool to advance environmental goals and increase employment.

No shift of taxation from labour to energy

Climate change and energy and sustainable development

Climate is a natural resource vital to humanity and rapid climate change poses a threat to food security, human health; the preservation of species and ecosystems and the livelihoods of many human communities, particularly in coastal and dry areas ([3]). As such, climate change has the potential to undermine the very basis of sustainable development.

Abating climate change is necessary for sustainable development

There is rather wide consensus among 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, particularly from the burning of fossil fuels such as oil, coal and natural gas. Recent observations of already visible climate changes, such as the retreat of the Arctic sea ice and rising sea levels, indicate that climate change is progressing faster and may lead to more severe impacts than previously thought. Of particular concern are tipping points, where a temperature rise beyond a critical threshold might trigger abrupt and potentially irreversible shifts in the climate system. Examples include instability of the Indian monsoon or die-back of the Amazon ([4]).

Climate change might progress quicker than previously thought

Given that the energy sector is the biggest greenhouse gas emitter in the EU, measures to transform the sector are at the centre of climate change mitigation efforts. On the other hand, energy is also an enabler of economic development and social progress. Thus, securing access to energy resources at competitive and socially-acceptable prices is a prerequisite for ensuring sustainable development both within and outside the EU.

Transformation of the energy sector is at the centre of climate change mitigation efforts but also offers economic opportunities

Energy consumption is responsible for 80 % of total EU GHG emissions. Reducing the sector's carbon footprint is thus a key challenge. However, other adverse effects of energy production, such as air pollution and land consumption, must also be addressed. Ensuring energy supply at competitive prices is a third challenge given declining oil and gas production within the EU and increasingly volatile world market prices for fossil fuels. To address these challenges, the EU promotes the use of renewable energies and energy efficiency as one of five headline targets of its Europe 2020 Strategy ([5]). Despite still being costly compared to fossil fuels, low-carbon technologies also present an economic opportunity for the EU. Green technology development is a major field of innovation and the relevant industries employ a growing number of people ([6]).

The climate change and energy theme is linked to other areas of sustainable development in many ways. Since energy is used in virtually every economic activity, climate change and energy policies have an impact on a wide range of economic activities, from transport to production and consumption. Thereby, many climate change mitigation measures can create benefits for other areas of sustainable development, for example, by creating health benefits through reduced air pollution. Moreover,

Mitigation of and adaptation to climate change will impact most areas of sustainable development

([3]) Pachauri, R.K. and Reisinger, A. (eds), *Climate Change 2007: Synthesis Report,* Geneva, Intergovernmental Panel on Climate Change, 2007, pp. 48-54.
([4]) Richardon, K., et al., *Climate change: Global Risks, Challenges and Decisions, Synthesis Report from the Scientific Congress in Copenhagen,* Copenhagen, 2009.
([5]) Commission communication, *Europe 2020. A European strategy for smart, sustainable and inclusive growth,* COM(2010) 2020.
([6]) Organisation for Economic Co-operation and Development, *Interim Report of the Green Growth Strategy: Implementing our commitment for a sustainable future,* Meeting of the OECD Council at Ministerial Level, 27-28 May 2010.

adaptation to climate change will alter infrastructure and city planning as well as management of forests, waters and coasts. Most notably, it will affect decision-making in development assistance since climate change will hit many developing countries harder and earlier than Europe.

Box 6.1: Objectives related to climate change and clean energy in the Europe 2020 Strategy

- Reduce greenhouse gas emissions by at least 20 % compared to 1990 levels or by 30 %, if the conditions are right;
- Increase the share of renewable energy sources in final energy consumption to 20 %;
- A 20 % increase in energy efficiency;
- *Flagship Initiative 'Resource efficient Europe':* Support the shift towards a resource-efficient and low-carbon economy that is efficient in the way it uses all resources. The aim is to decouple our economic growth from resource and energy use, reduce CO_2 emissions, enhance competitiveness and promote greater energy security;
- *Flagship Initiative 'Innovation Union':* Re-focus R&D and innovation policy on the challenges facing our society, such as climate change, energy and resource efficiency, health and demographic change;
- *Flagship Initiative 'An industrial policy for the globalisation era':* To establish an industrial policy creating the best environment to maintain and develop a strong, competitive and diversified industrial base in Europe as well as supporting the transition of manufacturing sectors to greater energy and resource efficiency.

Box 6.2: Objectives related to climate change and clean energy in the EU 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 global surface average temperature not to rise by more than 2ºC compared with 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 into all relevant European policies.

Further reading on climate change and energy

Bolla, V., and Pendolovska, V., Eurostat, *Driving forces behind EU-27 greenhouse gas emissions over the decade 1999-2008,* Statistic in Focus 10/2011, Luxembourg, 2011

Commission communication, *Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage,* COM(2010) 265

Commission communication, *A roadmap for moving to a competitive low carbon economy in 2050,* COM(2011) 112

Commission White paper, *Adapting to climate change: Towards a European framework for action,* COM(2009) 147

European Environment Agency, *Annual European Union greenhouse gas inventory 1990–2009 and inventory report 2011,* Publications Office of the European Union, Luxembourg, 2011

Eurostat, *Energy, transport and environment indicators, 2011 edition,* Publications Office of the European Union, Luxembourg, 2011

Fee, E. (ed.), Johansson, D., Lowe, J., Marbaix, P., Matthews, B., and Meinshausen, M., *Scientific Perspectives after Copenhagen,* Belgian Presidency of the Council of the EU, 2010

International Energy Agency, *World Energy Outlook 2010,* Paris, IEA, 2010

Pachauri, R.K. and Reisinger, A. (eds), *Climate Change 2007: Synthesis Report,* Geneva, Intergovernmental Panel on Climate Change, 2007

Richardon, K., et al., *Climate change: Global Risks, Challenges and Decisions, Synthesis Report from the Scientific Congress in Copenhagen,* Copenhagen, 2009

Rummukainen, M., and Källén, E., *New climate science 2006-2009,* The Commission on Sustainable Development, Stockholm, 2009

Greenhouse gas emissions

Between 2000 and 2009 EU-27 greenhouse gas emissions declined. This reduction puts the EU below the target path towards a reduction of 20 % below 1990 levels by 2020

Commentary

EU greenhouse gas emissions increased in the early 2000s, but started to decline after 2004 and are now below 2020 target path

The EU has set a mid-term target to reduce emissions by at least 20 % below 1990 levels by 2020. This 2020 target is evaluated here as the main headline target.

EU-27 greenhouse gas emissions were 17.4 % below 1990 levels in 2009 — a net reduction of 974 million tonnes of CO_2 equivalent, 355 million tonnes of which were in 2009. Major reductions were achieved in the 1990s when emissions decreased at an annual average rate of 0.9 %. Emissions began to rise again in the first half of the 2000s, but this trend was reversed in 2004. Between 2004 and 2009, greenhouse gas emissions declined, on average, faster than during the 1990s.

The reductions achieved between 2000 and 2008 result from more efficient use of energy ([7]) and also reflect a switch to fuels with lower carbon content. Lower carbon intensity allowed emissions to fall despite rising energy consumption and transport volumes. Significant reductions were also achieved in the waste and agriculture sectors, which are responsible for the majority of non-CO_2 greenhouse gas emissions such as methane and nitrous oxide ([8]). An increase in renewable energy consumption and the economic recession are the main factors behind the stark reduction in greenhouse gas emissions in the EU in 2009 ([9]).

Emission reductions between 2000 and 2009 put the EU below the target path to the 2020 target. However, a large part of these reductions is due to the impacts of the economic crisis. International Energy Agency estimates of energy-related CO_2 emissions indicate that emissions increased again in 2010 ([10]). Furthermore, even with the average rate of decline between 2000 and 2009 the EU is not yet on track to meet its long-term commitment to reduce greenhouse gas emissions by 80-95 % by 2050 compared to 1990.

Figure 6.1: Greenhouse gas emissions, EU-27
(index 1990=100)

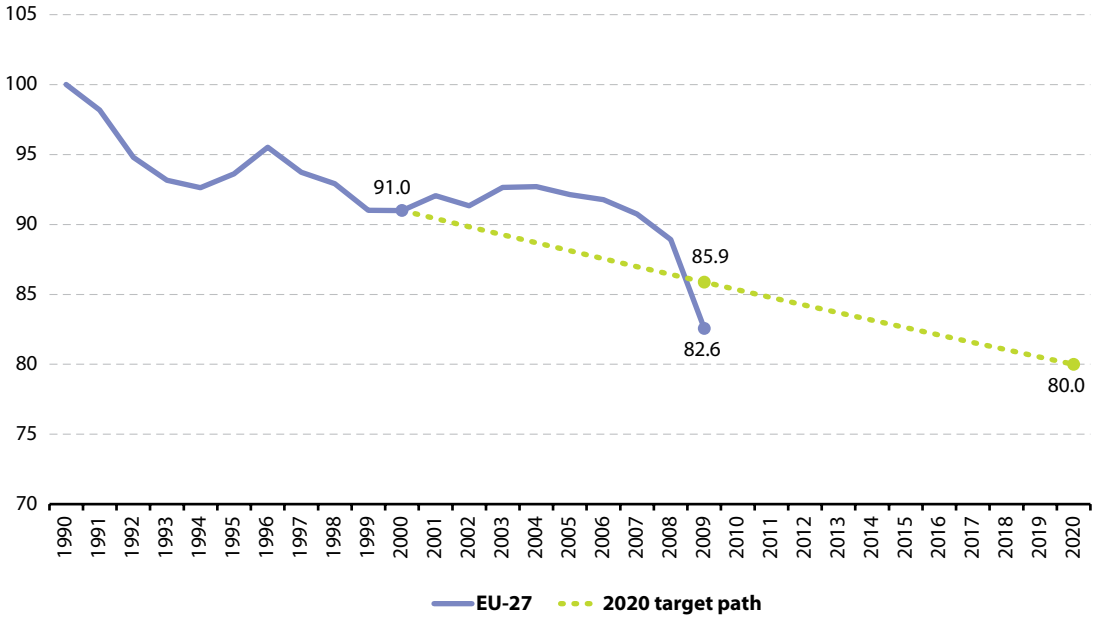
Period evaluated: 2000-2009

Distance to target path in 2009: -3.3 percentage points

Reduction of GHG emissions since 1990:

Absolute: -974 million tonnes CO_2 equivalent

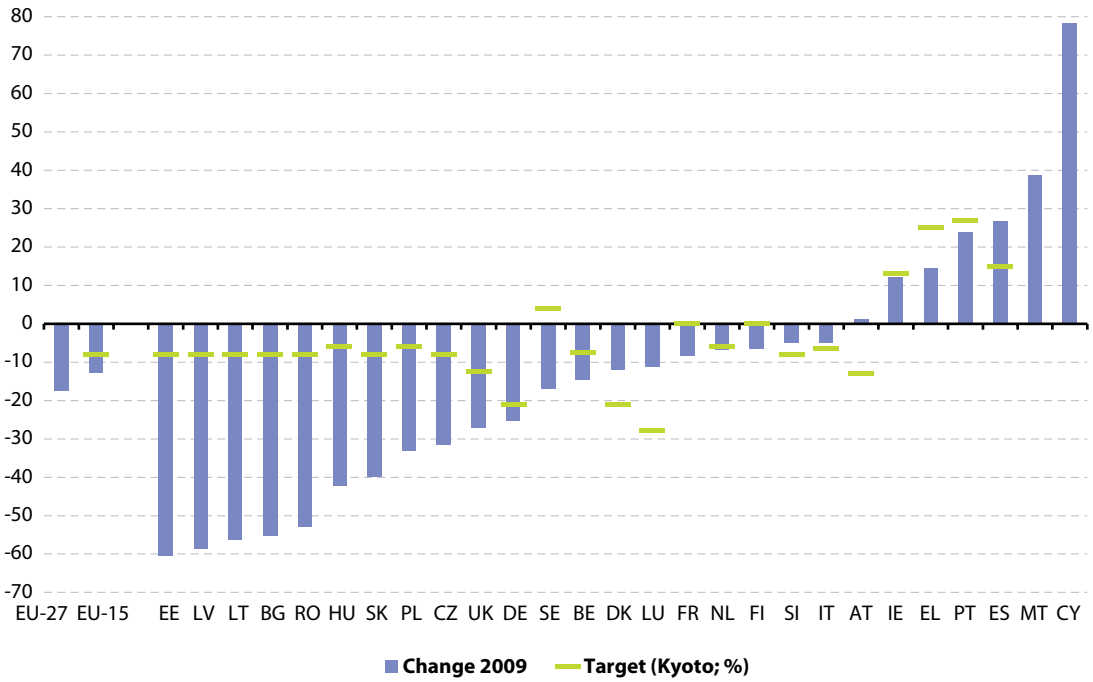
Relative: -17.4%



Source: European Environment Agency, Eurostat (online data code: tsdcc100)

([7]) See the indicator 'energy intensity' in the 'socioeconomic development' chapter.
([8]) See the indicator 'greenhouse gas emissions by sector' in this chapter.
([9]) *European Environment Agency, Annual European Union greenhouse gas inventory 1990–2009 and inventory report 2011, Publications Office of the European Union, Luxembourg, 2011.*
([10]) International Energy Agency, *Prospect of limiting the global increase in temperature to 2ºC is getting bleaker*, Latest information, 30 May 2011.

Figure 6.2: Change in greenhouse gas emissions to 2009 since the Kyoto base year, by country
(%)



Key figures in 2009:
Highest growth:
Cyprus: +78.3 %
Highest reduction:
Estonia –60.5 %
Averages:
EU-27: -17.4 %
EU-15: -12.7 %

NB: Changes for EU-27, CY and MT compared to 1990 levels.

Source: European Environment Agency, Eurostat (online data code: tsdcc100)

19 Member States have already reached their Kyoto targets. Between the Kyoto base year and 2009, GHG emissions in the EU-15 fell by roughly 12.7 %. Over this period, Spain recorded the highest increase in its GHG emissions (27%), followed by Portugal (24 %), Greece (14 %) and Ireland (12 %). In contrast, significant decreases were observed in Estonia (-60 %), Latvia (-58 %), Lithuania (-56 %), Bulgaria (-55 %) and Romania (-53 %).

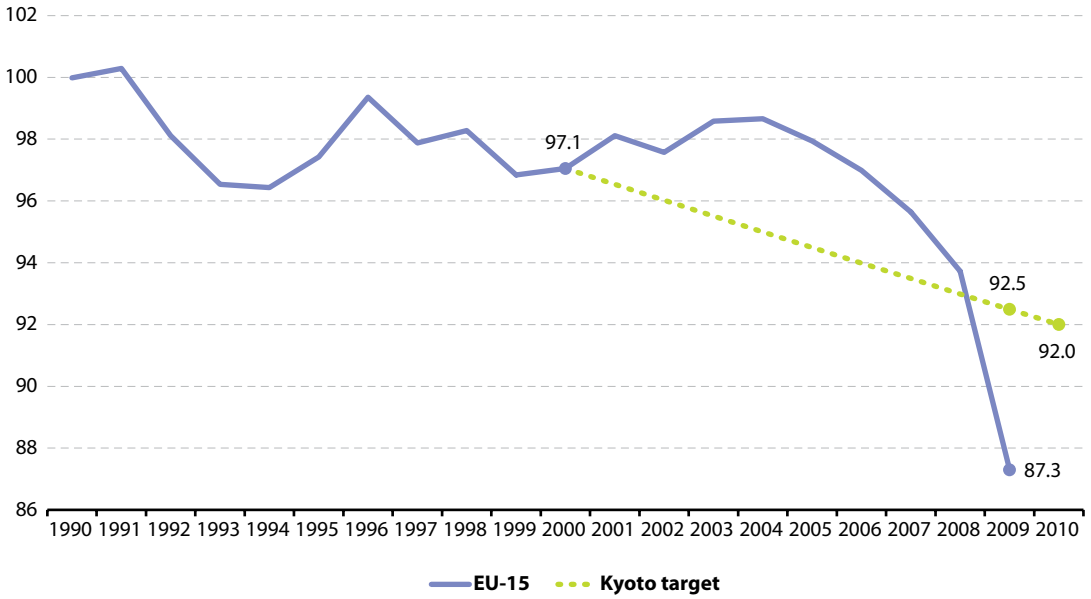
In 2009, among the largest emitters, Germany (20 % share of total EU-27 emissions), the United Kingdom (12 %) and France (11 %) decreased their emissions by 25 %, 27 % and 10 % respectively compared to the base year; while Italy (11 % of the total) increased them by 5 %. Without exception emissions decreased in all EU Member States from 2008 to 2009. This was partly due to the impact of the economic crisis, which strongly affected energy-intensive sectors, such as steel or cement production.

Figure 6.3: Greenhouse gas emissions, EU-15
(index Kyoto base year =100)

Key figures for 2000-2009:

Distance to target path in 2009:
-5.2 percentage points

Absolute GHG reduction:
-542 million tonnes CO_2 equivalents



Source: European Environment Agency, Eurostat (online data code: tsdcc100)

EU-15 on track to meet collective Kyoto target

Between 1990 and 2009, EU-15 greenhouse gas emissions declined by 12.7 %, putting the group well on track towards the 8 % reduction target for 2008-2012 set in the Kyoto Protocol. Emissions rose somewhat in the first years of the century, but have shown a clear downward trend since 2004. The decline was sharp between 2008 and 2009.

Indicator relevance

The EU's objective is to limit the increase in global average temperatures to not more than 2 °C above the pre-industrial level. To achieve this goal, mid- and long-term targets were set for reducing greenhouse gas emissions.

The Kyoto Protocol is an international agreement that includes legally binding greenhouse gas emissions targets for the industrialised countries and aims to an overall reduction of at least 5 % from the 1990 levels by the period 2008-2012. The Protocol defined individual targets per country. The EU agreed to an 8 % reduction of its GHG emissions by 2008-2012 compared to the Kyoto base year and redistributed this target among its then 15 Member States under a burden-sharing agreement ([11]).

Furthermore, Member States agreed to reduce total EU greenhouse gas emissions by 20 % compared to 1990 by 2020. Minimising overall reduction costs to meet the 20% objective implies a 21 % reduction in emissions from sectors covered by the EU Emissions Trading System (EU ETS) compared to 2005 by 2020, on the one hand. This is to be achieved via a single EU-wide cap on ETS emissions. On the other hand, it also implies a reduction of 10 % in emissions for sectors outside the EU ETS. All Member States have agreed country-specific greenhouse gas emission limits ([12]) in 2020 compared to 2005 for sectors outside the EU ETS

([11]) Decision 2002/358/EC concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder.
([12]) Decision 2009/406/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.

Finally, the low-carbon roadmap ([13]) stipulates that the transition towards a competitive low carbon economy means that the EU should prepare for reductions in its domestic emissions by 80 % by 2050 compared to 1990.

Definition

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_2), methane (CH_4), nitrous oxide (N_2O), and the so-called F-gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride (SF_6). Each gas is weighted by its global warming potential and aggregated to give total greenhouse gas emissions in CO_2 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.

([13]) *Commission communication, A roadmap for moving to a competitive low carbon economy in 2050,* COM(2011) 112.

Consumption of renewables

Between 2006 and 2008 the share of renewables in gross final energy consumption grew steadily. If growth were to be sustained at the rate observed over this short period, the EU would meet its 2020 target

Commentary

Growth in renewables in energy consumption is on track to exceeding the 20 % target by 2020

In 2008, the share of renewables in gross final energy consumption reached 10.3 %, up from 8.9 % in 2006. This represents an average annual increase of 7.6 % per year between 2006 and 2008. Available data only covers a three-year-period which makes extrapolation difficult. However, if this pace of growth could be sustained, the EU would exceed its target of covering 20 % of final energy consumption from renewable sources by 2020.

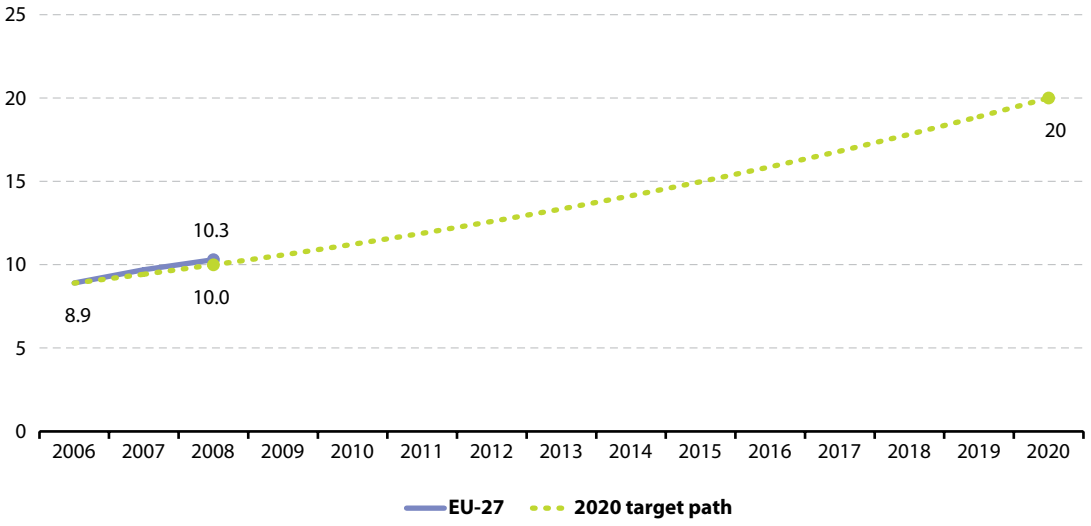
The share of energy from renewable sources is highest in electricity generation where renewables covered 16.7 % of gross consumption in 2008. In final energy consumption for heating, the share of renewables stood at 11.9 % while it reached only 3.5 % in fuel consumption for transport ([14]).

Increased uptake of renewables reflects incentives

The increase in the share of renewables is driven by two main trends. Installed capacity for renewable electricity and heat generation has been growing steadily since 1990, as has the use of biofuels between 2004 and 2008. This growth is in major parts a result of promotion policies, including feed-in tariffs, grants, tax credits and quota systems. Moreover, total gross final energy consumption was lower in 2008 compared with 2006, thereby increasing the relative contribution of renewable energy ([15]). Measures such as energy savings and improving energy efficiency are expected to further reduce energy consumption and influence the average annual growth rate of renewables.

Figure 6.4: Share of renewable energy in gross final energy consumption, EU-27 (%)

Period evaluated: 2006-2008
Distance to target path in 2008: +0.3 percentage points
Average annual growth rate: +7.6 %



Source: Eurostat (online data code: tsdcc110)

Member State measures to increase use of renewables are documented in Action Plans

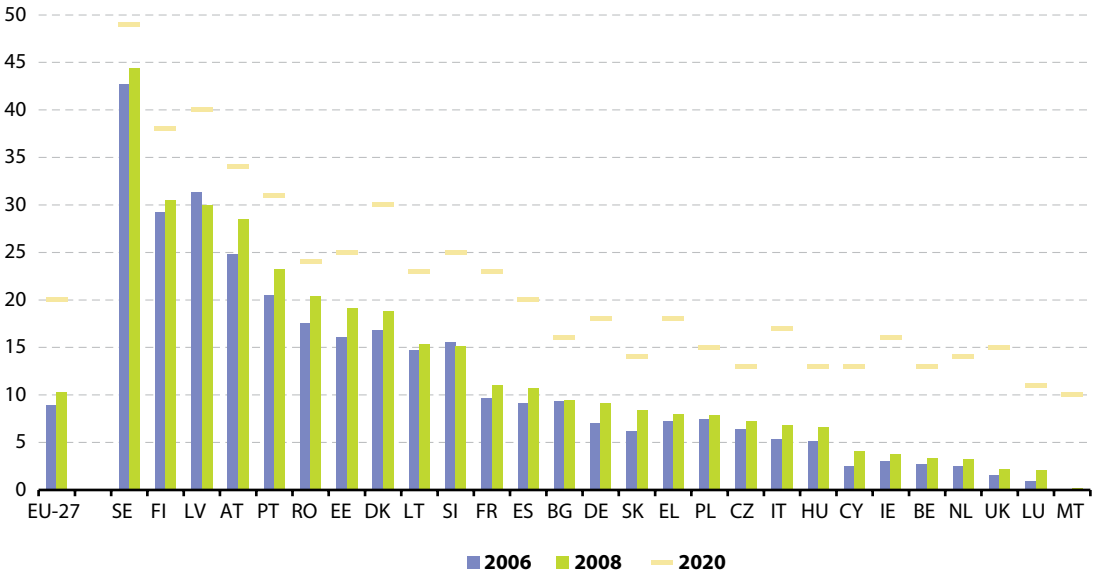
In the national renewable energy action plans Member States explain how they plan to reach the targets set in the Renewable Energy Directive ([16]). If all Member States follow the trajectories for renewable energy expansion outlined in their plans, the EU should exceed its 20 % target by 0.7 percentage points ([17]).

([14]) Roubanis, N., Dahlström, C., Noizette, P., Eurostat, *Renewable Energy Statistics,* Statistics in Focus 56/2010,, Luxembourg, 2010; see also the indicator 'gross inland energy consumption' in this chapter.
([15]) Ibid.
([16]) European Commission, Transparency Platform, National Renewable Energy Action Plans.
([17]) Beurskens, L.W.M., Hekkenberg, M., *Renewable Energy Projections as Published in the National Renewable Energy Action Plans of the European Member States,* Amsterdam, Energy Research Centre of the Netherlands, 2011.

The share of renewable energy sources in gross final energy consumption for 2008 varied widely among Member States ranging from 0.2 % in Malta to 44.4 % in Sweden. This range reflects differences in the respective resource base, mainly with regard to hydropower capacity and biomass availability. Between 2006 and 2008, all but two Member States increased their share of renewable energy, albeit by differing amounts.

The share of renewables in energy consumption in 2008 varied from 0.2 % to 44.4 % between Member States

Figure 6.5: Share of renewable energy in gross final energy consumption, by country
(%)



Key figures for change 2006 to 2008

Countries with growing share: 25

Highest absolute growth: Austria: +3.7 percentage points

Furthest from target:

UK: 12.8 percentage points

Source: Eurostat (online data code: tsdcc110)

Indicator relevance

Renewable energy sources are important for cutting greenhouse gas emissions and reducing the EU's dependence on imported fossil fuels. According to the Europe 2020 Strategy, a more mature market for renewable energy technologies is also expected to bring about social and economic benefits such as new jobs ([18]).

Two targets with different time horizons guide the EU effort to expand renewable capacity: the 1997 White Paper's ([19]) goal to double the use of renewables in the EU from 6 % to 12 % between 1996 and 2010, and the 20 % renewables target for 2020 established in the Directive on the promotion of renewable energy from 2009 ([20]). This indicator measures progress towards the 2020 target ([21]).

Definition

The indicator is defined as the share of renewables in gross final energy consumption, which refers to the quantity of energy consumed within a country's border (see indicator 'final energy consumption'). The energy sources taken into account are hydro, geothermal, wind, and solar power, and biomass and the biodegradable fraction of waste.

([18]) COM(2010) 2020, op. cit.
([19]) Commission communication, *Energy for the future: renewable sources of energy – White Paper for a Community strategy and action plan*, COM(97) 599.
([20]) Directive 2009/28/EC on the promotion of the use of energy from renewable sources.
([21]) Eurostat, *Energy transport and environment indicators, 2010 edition*, Luxembourg, Publications Office of the European Union, 2011.

Greenhouse gas emissions by sector

The energy industries and the transport sector are the biggest greenhouse gas emitters in the EU

Commentary

Whilst the share of emissions from manufacturing and construction and industrial processes have fallen, the share of emissions from transport has increased

With some notable exceptions, the proportions of total GHG emissions (excluding international bunkers and land use, land use change and forestry) emitted by each of the main source categories in the EU-27 have changed very little between 1990 and 2009. The main changes have been reductions from manufacturing industries and construction (from 14.8 % to 11.5 %) and from industrial processes (from 8.3 % to 7 %) as well as, most notably, an increase from 13.8 % to 20.2 % from transport. Changes in the shares emitted by other categories have been minor.

The vast majority (77.5 %) of EU-27 GHG emissions come from energy combustion in industry, transport and other sectors. A further 1.8 % are fugitive emissions resulting mainly from leakage and vapour loss. Together, combustion and fugitive emissions comprise the energy sector, and the trends in the emissions from this sector reflect both the quantities of energy and the mix of fuels consumed. Changes in the energy consumption of the different sectors are monitored by the indicator 'final energy consumption' in the chapter on sustainable consumption and production, whilst changes in the overall fuel mix are monitored by the indicator 'gross inland energy consumption' in this chapter. It is of note that whilst emissions from the energy sector fell by 1.3 % between 2000 and 2008, gross inland energy consumption grew by 4.5 %.

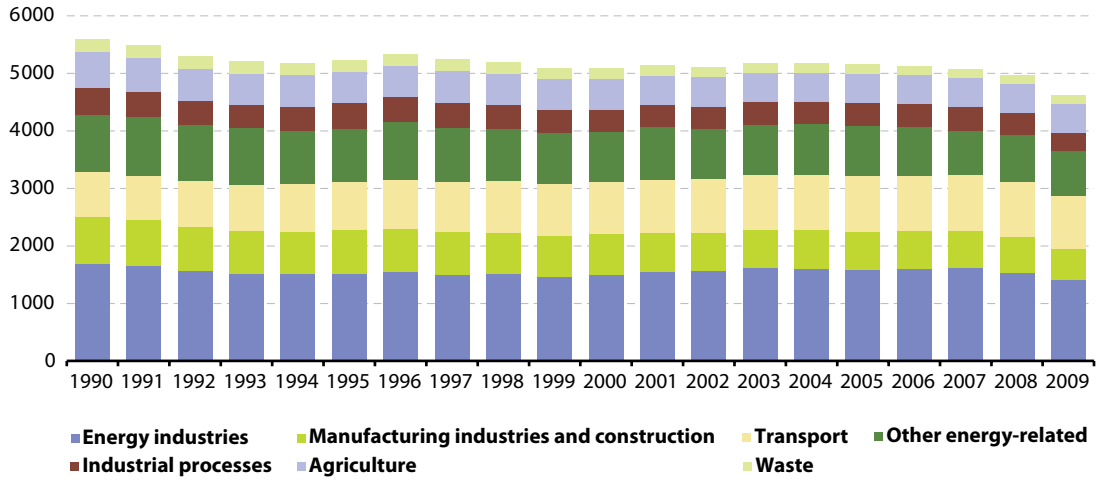
In the energy sector the energy industries dominate the picture both in terms of their energy consumption and in terms of emissions. They are followed by transport, and manufacturing and construction. Measured in absolute terms, the decline was strongest in the manufacturing and construction sector, which was responsible for 11.5 % of total emissions in 2009. Greenhouse gases emitted by the energy industries in the EU fell by -0.7 % per year on average between 2000 and 2009. Over the same period, greenhouse gas emissions from transport grew by 0.2 % per year. While emissions from both sectors had grown until 2007, they both fell in 2008 and 2009.

The second largest emitting sector is agriculture, which accounted for 10.3 % of total emissions in 2009. Nevertheless, emissions from this source have been steadily declining, being 7.5 %% less in 2009 than in 2000 and 22 % less than in 1990. The decreasing number of livestock and use of less nitrogenous fertilizers are among reasons for this decline.

Emissions resulting from industrial processes, (7.0 % of total emission in 2009) remained rather stable between 2000 and 2008 but then dropped sharply in 2009. Emissions from non-energy related industrial processes are mainly CO_2 from cement production, iron and steel production, nitrous oxide from nitric acid production, and hydrofluorocarbons from refrigeration and air conditioning equipment.

Measured in relative terms, there were substantial reductions in the waste sector, where emissions in 2009 were 19.4% below their level in 2000. However, because waste sector emissions represented only 3.2 % of total emissions in 2009, the absolute reduction of 35 million tonnes is dwarfed by reductions in other sectors, in particular the 325 million tonne reduction in emissions from the energy sector.

Figure 6.6: Greenhouse gas emissions by sector, EU-27
(million tonnes CO_2 equivalent)



Change over period 2000-2009:

Total greenhouse gas emissions: -1.1 % per year

Strongest absolute change: Manufacturing: -168 million tonnes

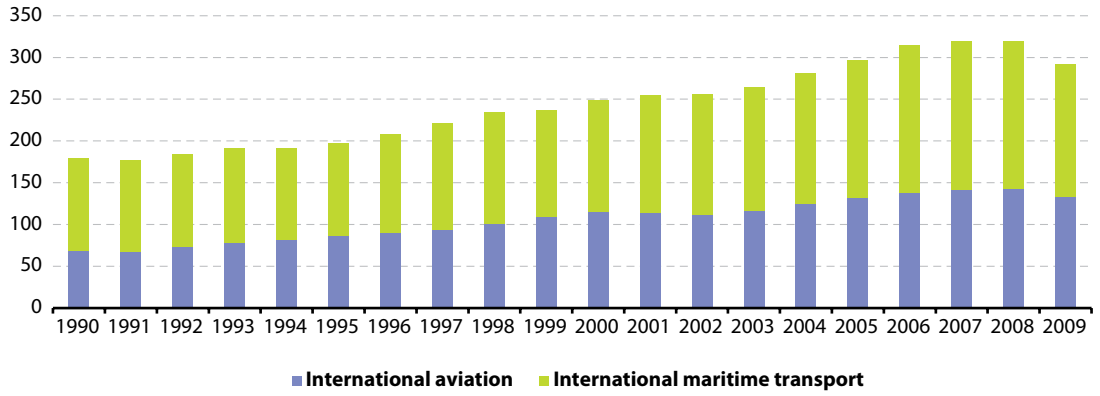
Strongest relative change: Manufacturing: -24.0 %

Source: European Environment Agency, Eurostat (online data code: tsdcc210)

Despite recent downturn, international bunkers remain fastest growing source of GHG emissions

For the first time since 1991, emissions from international bunkers decreased slightly in 2008, and then fell substantially in 2009 as a consequence of the economic downturn. Nonetheless, emissions from international aviation and maritime transport remain the fastest growing source of greenhouse gas emissions. Compared with 1990 levels, total emissions from international bunkers are up by some 63 %. Emissions from international bunkers are excluded from the Kyoto Protocol and are currently not included in the reduction targets for 2012 and 2020. However, if added to total EU greenhouse gas emissions, international bunkers would raise the share of transport emissions in 2009 from 20.2 % to 25 %.

Figure 6.7: Emissions from international bunkers, EU-27
(million tonnes CO_2 equivalent)



Change over period 2000-2009:

Absolute change: +43 million tonnes CO_2 equivalents

Relative change: +17.3%

Source: European Environment Agency

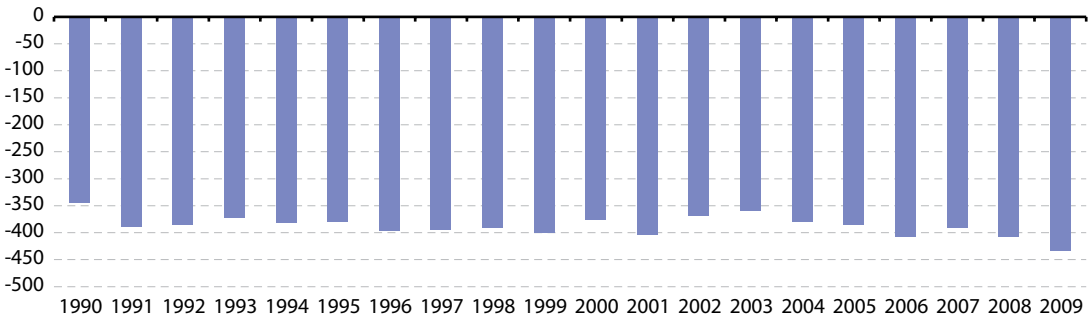
Patterns of land use, land use change and forestry practices (LULUCF) can contribute to emission reductions in two ways: removing greenhouse gases from the atmosphere (for example by planting trees or improving forest management) or reducing emissions resulting from these practices (for example by curbing deforestation).

Figure 6.8: Emissions from land use, land use change and forestry, EU-27 (million tonnes of CO_2 equivalent)

Change over period 1990-2009:

Highest removal in one year: 2009: -433 million tonnes

Lowest removal in one year: 1990: -344 million tonnes



Source: European Environment Agency.

Indicator relevance

Different emission sources related to different sectors of the economy, such as electricity production, transport, the residential sector 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.

The indicator is contextual because it merely delivers supplemental information to enrich the analysis of the indicator 'Greenhouse gas emissions'. No sector-level reduction targets exist at EU or national level. However, it has been included for providing background information helpful to an understanding of the topic.

Definition

This indicator shows the contribution of 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_2 equivalents.

Greenhouse gas emissions intensity of energy consumption

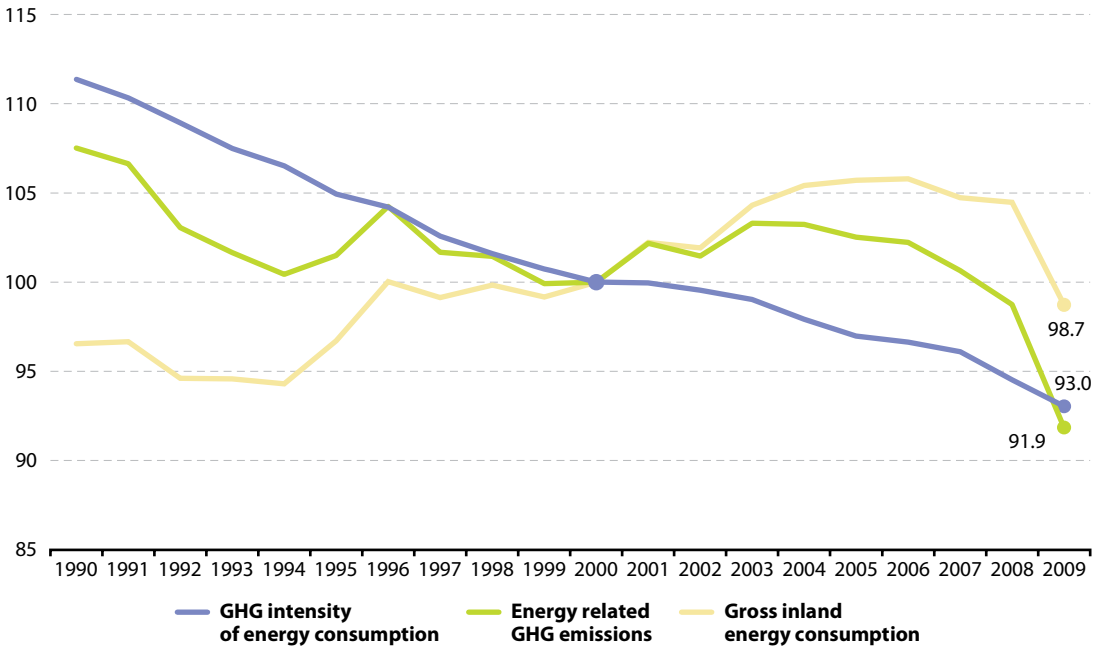
Between 2000 and 2009 absolute decoupling of EU greenhouse gas emissions from gross inland energy consumption took place

Commentary

The greenhouse gas intensity of energy consumption in the EU steadily decreased between 2000 and 2009, mainly due to the switch from solid fuels to gas and, to a lesser extent, renewable energies ([22]). Emissions intensity fell slightly. The average decrease in the 2000s is still slower than in the 1990s, when the emission intensity of energy consumption fell at an average annual rate of 1.1 %.

The EU emitted less GHG emissions per energy unit consumed

Figure 6.9: Greenhouse gas emissions intensity of energy consumption, EU-27 (index 2000=100)



Period evaluated: 2000-2009

Average annual growth rates

Gross inland energy consumption: +0.93 %

GHG emissions: -1.1 %

GHG intensity of energy consumption: -0.8 %

Source: European Environment Agency, Eurostat (online data codes: tsdcc210, tsdcc220, tsdcc320)

Indicator relevance

Each type of fossil fuel contains a different amount of carbon for each unit of energy produced. The switch to lower or low carbon-content fuels is an important measure for achieving a number of objectives of the EU Sustainable Development Strategy. High carbon-content fuels include lignite and coal, whilst natural gas has low carbon content. Switching to lower carbon fuels and renewable sources reduces greenhouse gas emissions, even if overall energy consumption remains constant.

Definition

The greenhouse gas intensity of energy consumption is the ratio between energy-related greenhouse gas emissions and gross inland energy consumption.

([22]) See the indicator 'gross inland energy consumption'.

Global surface average temperature

The years, 2010, 2005 and 1998 ranked as the warmest on record. The decade 2001–2010 was also the warmest ever recorded

Commentary

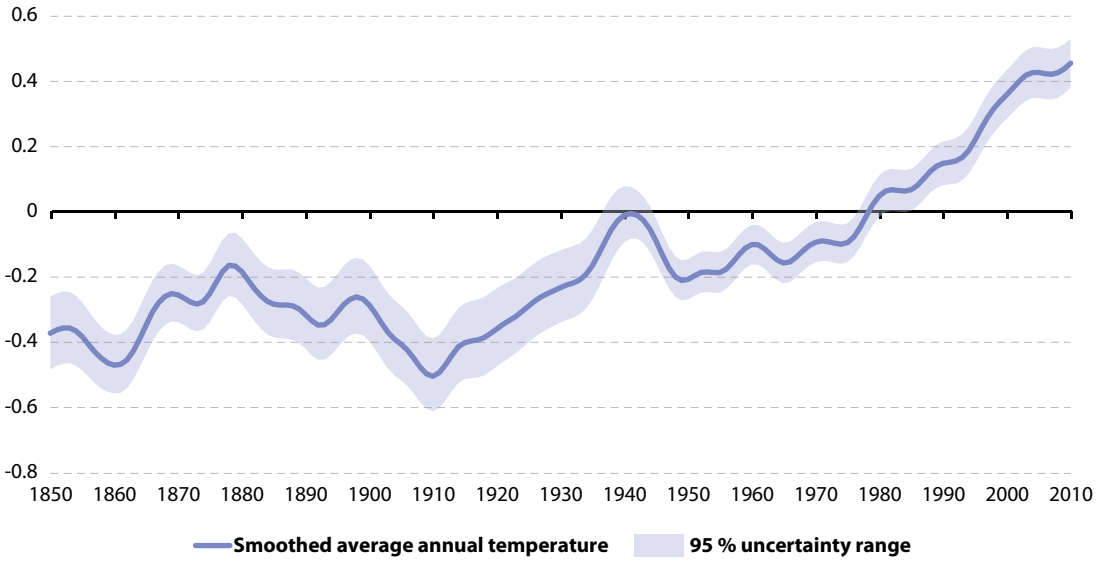
2001–2010 was the warmest ten-year period ever recorded

According to the World Meteorological Organization (WMO), the year 2010, 2005 and 1995 rank as the warmest years on record since systematic instrumental measurements began around 1850. In 2010 the average global surface temperature climbed to 0.53 °C above the 1961–1990 average of 14 °C. Warming has been particularly strong in Africa, parts of Asia, and parts of the Arctic. Between 2001 and 2010, the average global surface temperature was 0.46 °C above the 1961-1990 mean, making the decade the warmest ten-year period ever recorded ([23]). This follows the trend in temperature where the 2000s were warmer than the 1990s, which were warmer than the 1980s and earlier decades.

According to WMO, 'the 2010 data confirm the Earth's significant long-term warming trend'. Since the beginning of the 20th century, the global average surface temperature has risen by 0.74 °C. However, the rate of increase was not continuous, but accelerated over the second half of the century ([24]). The temperature rise is also unequal across space. Warming is much stronger over land than over the ocean and, as a consequence, the temperature rise is higher over the northern hemisphere (where most of the Earth's land area is located) than over the southern hemisphere ([25]).

Figure 6.10: Global annual mean temperature deviations
(temperature deviation in °C, compared to 1961-1990 average)

Key figures:
Average deviations from 1961-90 mean over decade:
2001-2010: +0.46 °C
1991-2000: +0.24 °C



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

([23]) World Meteorological Organization, *2010 equals record for world's warmest year,* Geneva, WMO Press release No. 906, 20 January 2011.
([24]) World Meteorological Organization, WMO statement on the status of the global climate in 2008, Geneva, WMO-No 1039, 2009.
([25]) Pachauri, R.K. and Reisinger, A. (eds), *Climate Change* 2007: *Synthesis Report*, Geneva, Intergovernmental Panel on Climate Change, 2007.

Indicator relevance

According to the IPCC Fourth Assessment Report ([26]) '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 with the pre-industrial level.

The international community, acting through the United Nations and 'determined to protect the climate system for present and future generations', agreed in 1992 on a Framework Convention on Climate Change ([27]) with the objective of 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.' In 1996 the EU set a target that global warming should not exceed 2 °C above the pre-industrial temperature ([28]) and this has since been adopted at UN level ([29]). The Intergovernmental Panel on Climate Change estimates that to limit warming to 2-2.4 °C, a 50-85 % cut in global GHG emissions (compared with 2000 levels) will be needed by 2050. In early 2010, many countries pledged emission reductions under the Convention. However, model-based analysis indicates that these reductions may not be sufficient to limit the average global temperature rise to 2 °C ([30]).

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. It is included for providing background information helpful to an understanding of the topic.

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.

([26]) 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.
([27]) United Nations, Framework Convention on Climate Change, 1992.
([28]) Environment Council conclusions, 25 June 1996.
([29]) United Nations Framework Convention on Climate Change, Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010, Decision 1/CP.16.
([30]) Dellink, R., Briner, G., and Clapp, C., *Costs, Revenues, and Effectiveness of the Copenhagen Accord Emission Pledges for 2020,* OECD Environment Working Papers No 22, 2010; United Nations Environment Programme, *The Emissions Gap Report: Are the Copenhagen Pledges Sufficient to Limit Global Warming to 2 °C or 1.5 °C?,* 2010.

Energy dependence

The EU dependence on energy imports increased substantially from 2000 and reached 53.9 % in 2009. It is now substantially higher than during the 1990s

Commentary

The EU depends on foreign imports for more than half of the energy it consumes

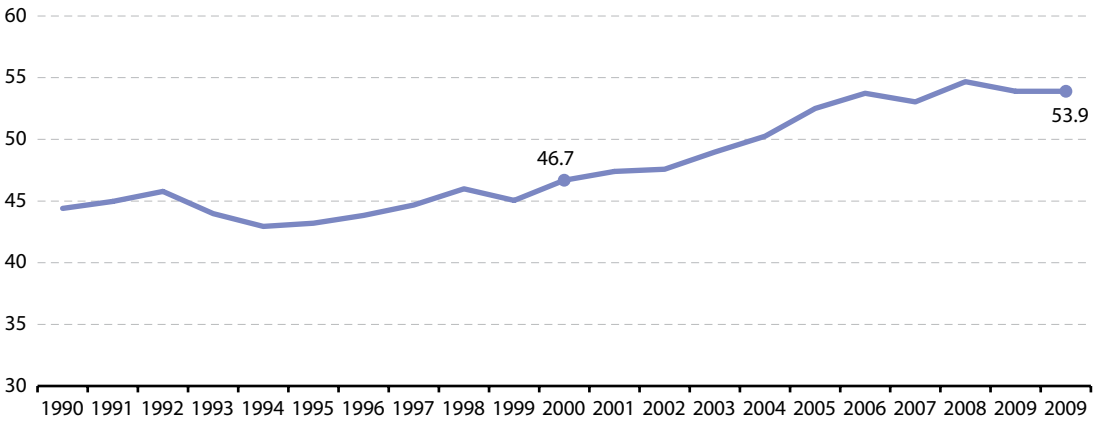
Energy dependence shows how much an economy relies on imports to meet its domestic energy demand. Between 2000 and 2009, EU dependence on energy imports grew from 46.8 % to 53.9 %. Compared with the previous decade, when imported energy remained fairly constant at about 45 %.

Overall energy dependence can be broken down by different energy sources. In 2009 dependence was highest for crude oil with an import share of 83.5 %, followed by natural gas (64 %) and hard coal (62 %). Compared with 2000, dependence increased for all three sources. By contrast, the difference between imports and exports is close to zero for other energy sources, encompassing for example renewable energy, lignite, coke, patent fuels and brown coal briquettes. This category also includes nuclear energy, which is counted as a domestic energy source. These other sources together represent 27.3 % of gross inland energy consumption.

The main reasons for the increase in energy dependence are greater domestic energy demand, the increasing importance of natural gas imports, and declining North Sea oil and gas production.

Figure 6.11: Energy dependence, EU-27
(%)

Period evaluated: 2000-2009 (total energy dependence)
Average annual growth rate: +1.6 %
Relative change: +15.4 %
Absolute change: +118.5 mio TOE

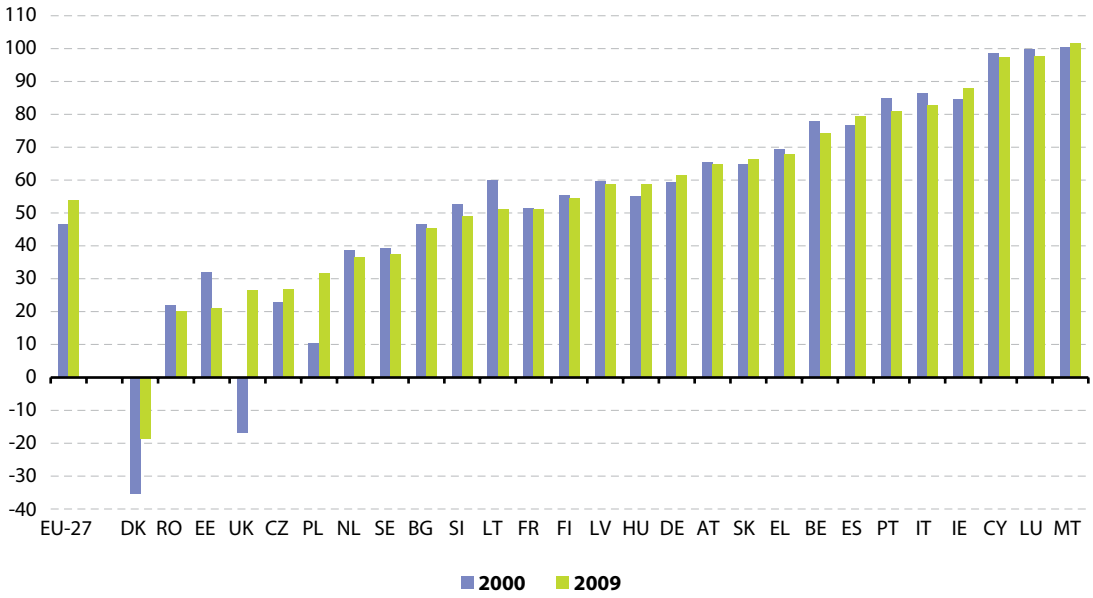


Source: Eurostat (online data code: tsdcc310)

Energy dependence was above 50 % in 17 EU Member States in 2009

In 2009, 17 out of the 27 EU Member States showed dependence rates over 50 %. Dependence was close to 100 % in the small countries Cyprus, Luxembourg and Malta. Eight Member States, mainly from northern and eastern Europe, had energy dependence levels well below 50 %. The lower import share reflects the larger availability of indigenous energy sources in these countries, ranging from coal (Poland, Czech Republic and Romania) to oil and gas (Denmark, UK and Netherlands) and renewable resources like biomass and hydro power (Sweden, Estonia).

Figure 6.12: Energy dependence, by country, 2009
(%)



Key figures in 2009:

Highest:
Malta: 100 %

Lowest:
Denmark: -18.8 %

EU-27 average:
53.9 %

Source: Eurostat (online data code: tsdcc310)

Indicator relevance

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 EU Sustainable Development Strategy and of the EU Climate and Energy Package and is a focus of Energy 2020 strategy ([31]).

Definition

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

([31]) Commission communication, *Energy 2020: A strategy for competitive, sustainable and secure energy*, COM(2010) 639.

Gross inland energy consumption

By 2009 compared to 2000 demand for energy in EU-27 decreased slightly. There has been a general shift away from solid fuels towards natural gas and to renewable energy

Commentary

Lack of significant energy savings

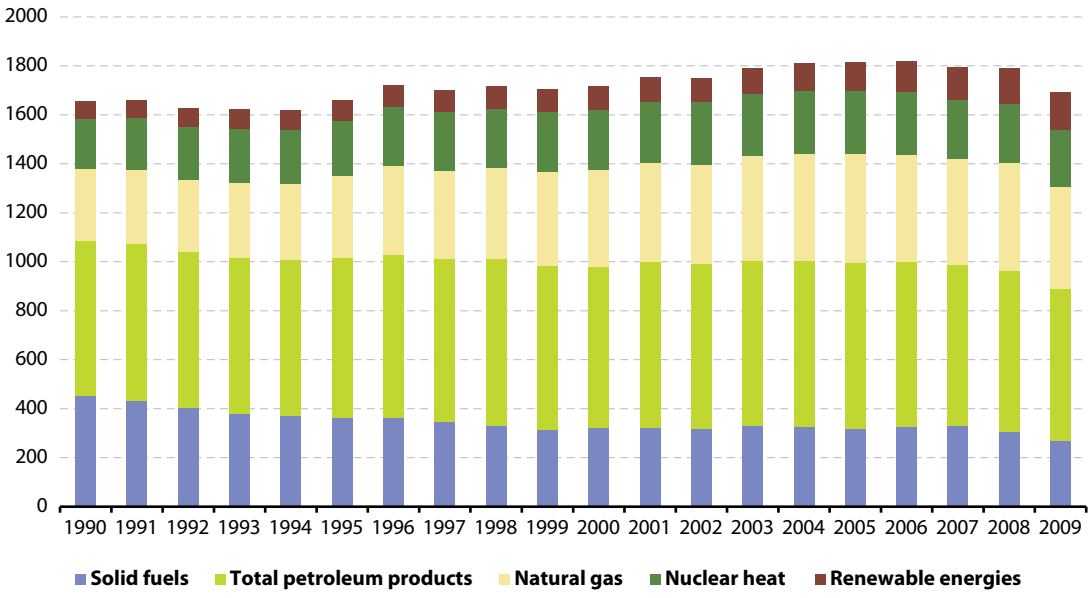
2009 is the first year in the period that the EU used less energy than in 2000. This 1.2% decrease is likely due to the economic crisis. Even if quantitative target was not defined for this indicator, gross inland energy consumption (GIC) should be cut to a much larger degree if the EU is to meet its saving targets for energy use ([32]).

In comparison with the 1990s, small changes in the fuel mix have occurred since 2000. After plummeting from 27 % to 18.5 % in the previous decade, the share of solid fuels in total consumption fell to 15.7 % in 2009. The share of crude oil and petroleum products also decreased slightly from 38 % to 36.5 % between 2000 and 2009. Natural gas consumption, on the other hand, increased from 23 % to 24.5 %, and renewables consumption went up from 6 % to almost 9 % during the same period. Nuclear energy was the only energy source that experienced a trend reversal: after growing from 12 % to 14 % in the 1990s, consumption fell slightly to 13.5 % in 2009.

In absolute numbers, energy demand fell by 22 million tonnes of oil equivalent (TOE) between 2000 and 2009. Looking closer, energy demand increased by 77 million TOE from 2000 and 2008 and then sharply dropped by 99 million TOE to 2009. As consumption of fossil fuels, crude oil and nuclear energy fell, the rise in energy demand was met with an increase in natural gas and renewable energy consumption.

Figure 6.13: Gross inland energy consumption, by fuel, EU-27
(million tonnes of oil equivalent)

Period evaluated: 2000-2009
Average annual growth rate: -0.1 %
Strongest absolute growth: Renewables: +55.6 mio TOE
Strongest absolute decline: Solid fuels: -52.8 mio TOE



Source: Eurostat (online data code: tsdcc320)

([32]) COM(2010) 639, op. cit.

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 energy-related 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 dependence in the EU.

Definition

Gross inland energy consumption is the quantity of energy consumed within a country's border. 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 in the EU increased between 2000 and 2008. Nonetheless, growth remains too slow to reach the 2010 target

Commentary

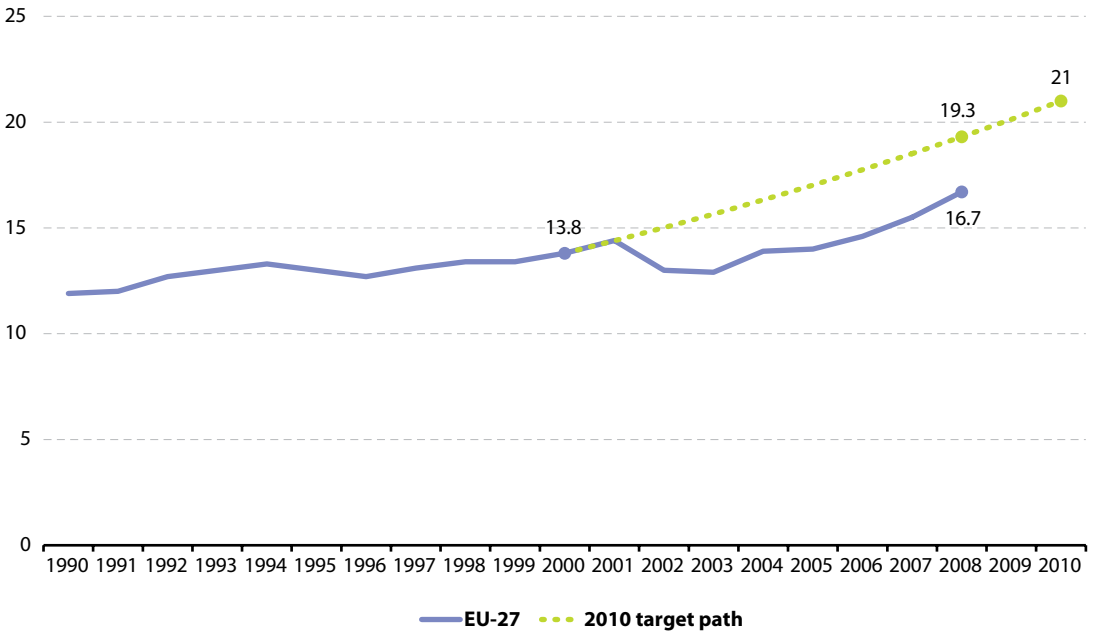
In 2008 one sixth of EU electricity was produced from renewable energy sources

Between 2000 and 2008 the share of renewable energy sources in electricity generation in the EU grew quickly, reaching 16.7 % in 2008. After declining early in the decade, the share of renewables increased by an average annual rate of 6.1 % between 2005 and 2008, four times faster than during the 1990s. However, even at this growth rate the EU would not meet its target to cover 21 % of electricity consumed from renewable sources by 2010. To date, only Hungary and Germany have already met their national targets for 2010 and only 5-10 other Member States are likely to meet theirs, based on existing 2006-2008 data.

In 2008, hydro power delivered the largest share of total renewable electricity (60 %), followed by wind energy (21 %) and biomass (17 %). Small contributions came from geothermal energy (1 %) and solar energy (1 %). However, the increase in renewable production in the 2000s was mainly due to installations of additional wind turbines and solar energy systems ([33]).

Figure 6.14: Electricity generated from renewable sources, EU-27
(% of gross electricity consumption)

Period evaluated: 2000-2008
Distance to target path in 2008: -2.6 percentage points
Average annual growth rate: +2.4 %



Source: Eurostat (online data code: tsdcc330)

Member States make progress in removing barriers to renewable energy production

In the past, growth in the renewable energies sector was hampered by high prices and administrative difficulties, and significant hurdles remain in several Member States ([34]). Nonetheless, recent installation rates show that most Member States are increasingly successful in addressing these barriers. Instruments for promoting electricity generation from renewable sources include financial support for example through feed-in tariffs, quota systems or grants, but also improvements in the regulatory framework to ensure priority access to the grid and swift authorisation procedures. Detailed

([33]) Roubanis, N., Dahlström, C., Noizette, P., Eurostat, *Renewable Energy Statistics,* Statistics in Focus 56/2010,, Luxembourg, 2010.
([34]) Commission Staff Working Document, *Recent progress in developing renewable energy sources and technical evaluation of the use of biofuels and other renewable fuels in transport,* SEC(2011) 130.

information on existing and planned measures can be found in the National Renewable Energy Action Plans which detail how Member States plan to reach the Renewable Energy Directive's targets ([35]).

Indicator relevance

Renewable energy sources are considered to produce negligible or zero greenhouse gas emissions, but scientists have raised doubts if this also applies for all types of liquid biofuels and biogas feedstocks ([36]). In 2001, the Directive on electricity production from renewable sources ([37]) 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 EU Sustainable Development Strategy and the Renewable Energy Directive ([38]).

Definition

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

([35]) European Commission, Transparency Platform, National Renewable Energy Action Plans.
([36]) Croezen, H.J., Bergsma, G.C., Otten, M.B.J., van Valkengoed M.P.J., Biofuels: indirect land use change and climate impact, CE Delft, 2010 and EEA Scientific Committee, *Opinion of the EEA Scientific Committee on the environmental impacts of biofuel utilisation in the EU,* 10 April 2008.
([37]) Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market.
([38]) Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

Consumption of renewable energy in transport

Growth in the EU consumption of renewable energy in transport accelerated between 2006 and 2008. At the current pace, the 2010 target is likely to be met

Commentary

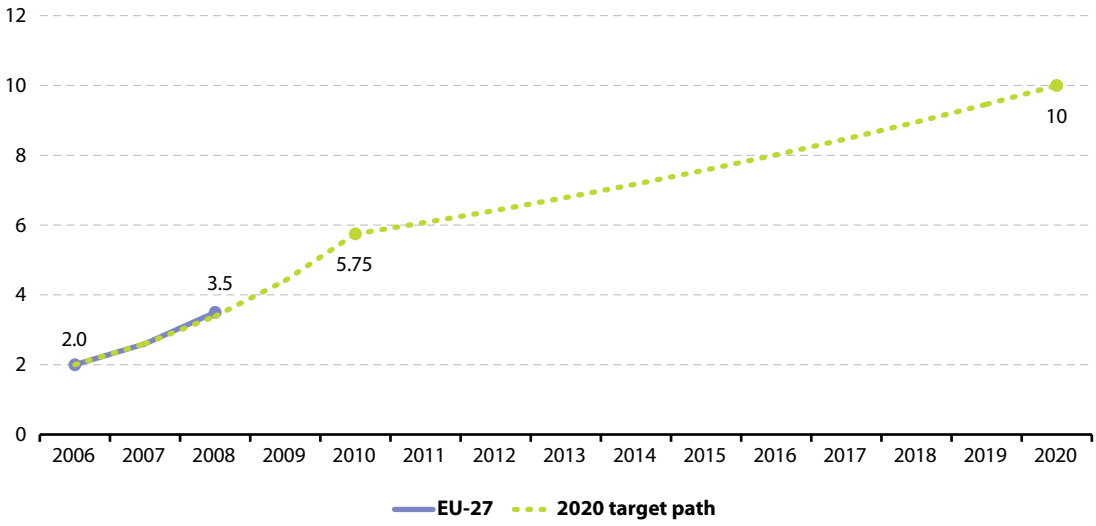
The EU will likely meet the 2010 target for renewable energy used in transport

From 2006 to 2008 the EU share of renewable energy in the petrol and diesel consumption of transport increased from 2 % to 3.5 %.The share of renewable energy in transport in 2008 remained below the 2010 target of 5.75 %. Nonetheless, at the average annual growth rate between 2006 and 2008, the EU would be able to reach both the 2010 target and the binding 10 % target by 2020.

The increase in renewable energy consumption, mainly based on the use of biofuels, reflects the widespread introduction of support systems at national level. Member States use tax rebates or biofuel obligations to promote renewable energy consumption in road transport ([39]). Governments have also set national targets as required by the Directive on renewable energy in transport ([40]), some of which are above the minimum 10 % target ([41]).

Figure 6.15: Share of renewable energy in fuel consumption of transport, EU-27 (%)

Period evaluated: 2006-2008
Distance to target path in 2008: +0.1 percentage points
Average annual growth rate: +32.3 %



Source: Eurostat (online data code: tsdcc340)

Indicator relevance

Biofuels are a means to curb greenhouse gas emissions from transport and simultaneously reduce the EU's dependency on oil imports ([42]).A binding target was set for 2020 in the Directive on renewable energy promotion ([43]): to reach a 10 % share of renewable fuels in the total fuel consumption of transport, including all suitable renewable energy sources. The Directive also reconfirms the indicative target for biofuels and other renewable fuels established in the Biofuels Directive ([44]) of 5.75 % for 2010. In practice, biofuels are expected to contribute almost all of the renewable energy used in transport up to 2010. Only a tiny fraction will come from biogas or renewable electricity.

([39]) Commission Staff Working Document, *Recent progress in developing renewable energy sources and technical evaluation of the use of biofuels and other renewable fuels in transport,* SEC(2011) 130.
([40]) Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport.
([41]) Geeraerts, K. et. al. National Legislation and national initiatives and programmes (since 2005) on topics related to climate change. European Parliament's Temporary Committee on Climate Change. 2007, p. 41.
([42]) Commission communication, *An EU strategy for biofuels,* COM(2006) 34.
([43]) Directive 2009/28/EC on the promotion of the use of energy from renewable sources.
([44]) Directive 2003/30/EC, op. cit.

Biofuels are considered to be virtually carbon-neutral, but scientists have raised doubts if this applies for all type of biofuels ([45]).To ensure at least some carbon saving in comparison to fossil fuels and to address concerns about the impact of biofuel production on the environment and food production, only biofuels conforming to the sustainability criteria laid down in the Directive are taken into account. More recently, the European Commission adopted Communications 2010/C 160/01 and 2010/C 160/02 that address the practical implementation of the EU sustainability scheme for biofuels and bioliquids.

Definition

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

([45]) Croezen, H.J., Bergsma, G.C., Otten, M.B.J., van Valkengoed M.P.J., Biofuels: indirect land use change and climate impact, CE Delft, 2010 and EEA Scientific Committee, *Opinion of the EEA Scientific Committee on the environmental impacts of biofuel utilisation in the EU,* 10 April 2008.

Combined heat and power

Between 2004 and 2009 the share of combined heat and power in gross electricity generation in the EU grew steadily, reaching 11.4 %

Commentary

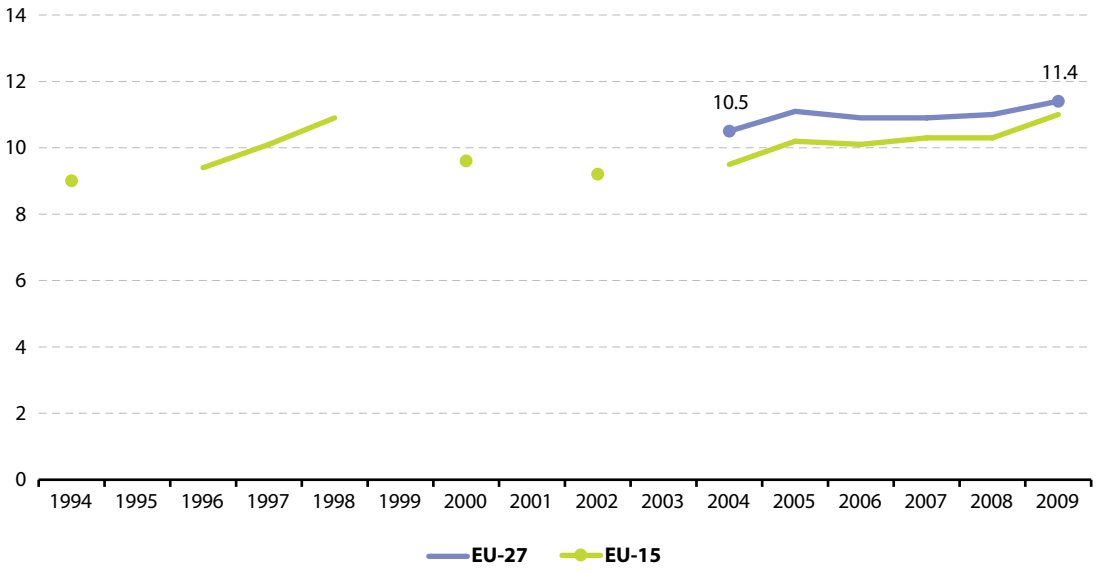
Combined heat and power generation grows at a slow pace

Between 2004 and 2009, the share of combined heat and power (CHP) in total EU electricity generation rose from 10.5 % to 11.4 %. Although a longer time series for the EU-15 is also shown in the figure below, these data should be treated with caution due to changes in the calculation method over time.

According to the Energy Efficiency Action Plan of 2006, several barriers, such as the lack of widespread district heating networks and, in some cases, lack of economic competitiveness, prevent capacity expansion ([46]). In its 2011 Energy Efficiency Action Plan, the Commission therefore proposes to make authorisation for new thermal power generation conditional on use of CHP if there is a sufficient potential demand for the heat produced ([47]).

Figure 6.16: Combined heat and power generation
(% of gross electricity generation)

Period evaluated: 2004-2009 (EU-27)
Average annual growth rate: +1.7 %
Relative change: +8.6 %



Source: Eurostat (online data code: tsdcc350)

Indicator relevance

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 used in single family homes to large-scale facilities. The heat delivered may be used for processing or space-heating close to the CHP plant or distributed through district heating networks.

The Directive on the promotion of cogeneration encourages Member States to identify and exploit their potential for 'high-efficiency cogeneration'. This is defined as cogeneration providing at least 10 % energy savings compared with separate production ([48]). Both the EU Sustainable Development Strategy and the Action Plans on Energy Efficiency have called for increased promotion of CHP.

([46]) Commission communication, *Action plan for energy efficiency: Realising the potential,* COM(2006) 545.
([47]) Commission communication, *Energy Efficiency Plan 2011,* COM(2011) 109, pp. 8-9.
([48]) Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market.

Definition

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

Implicit tax rate on energy

The implicit tax rate (ITR) on energy fell between 2000 and 2009

Commentary

Between 2000 and 2009, the implicit tax rate has fallen

The ratio of energy tax revenues to final energy consumption represents the effective tax burden on energy. There was a predominantly downward trend at EU-27 average level between 2000 and 2009 and the implicit tax rate fell by 5.6 %. The decrease indicates a decline in the effective tax burden on energy relative to the potentially taxable base. This trend conflicts with the EU Sustainable Development Strategy's principle of shifting taxation from labour onto resource and energy consumption. It is noteworthy; however that in 18 Member States the ITR was almost constantly growing over the period.

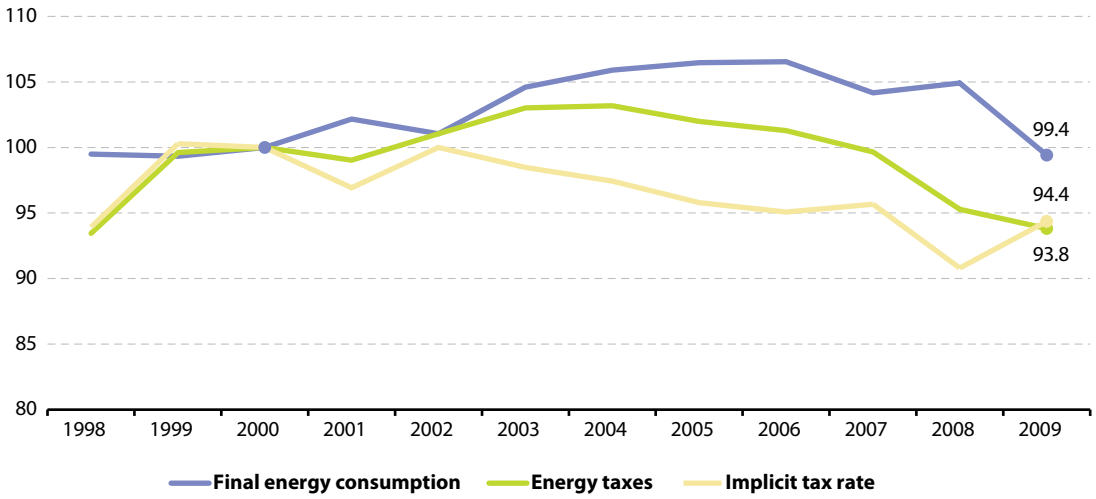
The progress and initial values are very different at Member States level. In the period 2000-2009 the average ITR varied from 28.8 Euro per tons of oil equivalent (TOE) in Romania to 291.4 TOE in Denmark. By and large, in most countries where the ITR was low in 2000 there has been an increase both in absolute and relative terms in the period till 2009. Also generally true, that ITR decreased, but only moderately, in those Member States where its initial value was higher. The exception is Romania where ITR was 58.2 Euro/TOE in 2000 and by 2009 it decreased to the lowest value in the EU to 26.6 Euro/TOE.

Furthermore, the share of energy taxes in total tax revenues also declined over this period. Even when Final Energy Consumption ([49]) increased fastest, between 2000 and 2004 (by 1.4 % per year), the share remained almost stable.

Since most energy taxes are levied as a nominal amount per unit of consumption, inflation leads to a reduction of the tax burden in real terms if the taxes are not adjusted on a regular basis.

Figure 6.17: Implicit tax rate on energy, EU-27
(index 2000 = 100)

Period evaluated: 2000-2009
Implicit tax rate:
Absolute change: -9.6 Euro/TOE
Relative change: -5.6%



Source: Eurostat (online data codes: tsdcc360, tsdpc320)

Indicator relevance

Many countries use energy taxes as an economic instrument to implement the 'polluter pays principle' and to support the Climate Change and Energy objectives. The EU Sustainable Development Strategy recommends Member States to 'consider further steps to shift taxation from labour to resource and

([49]) See indicator 'final energy consumption' in the chapter on 'sustainable consumption and production'.

energy consumption and/or pollution, to contribute to the EU goals of increasing employment and reducing negative environmental impacts in a cost-effective way'.

The Energy Taxation Directive ([50]) (ETD) sets minimum tax rates on energy products and electricity. The European Commission has proposed the revision of the ETD ([51]) to bring it more closely into line with the EU's energy and climate change objectives, in particular to address CO_2 emissions in the non-ETS sector, avoid negative interference with the EU ETS, facilitate energy savings and deployment of renewables and allow revenue generation in an un-distortive way. In general, the revision should improve the structure of the current Directive, so as to enable the Member States to use energy taxation more effectively for environmental and other policy purposes and to improve the functioning of the internal market. This revision might bring changes to how this issue is treated as part of the Sustainable Development Indicator set.

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.

([50]) Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity.
([51]) Commission communication, *Smarter energy taxation for the EU: proposal for a revision of the Energy Taxation Directive,* COM(2011) 168.

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 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 Office. The methodology and estimation of uncertainties is fully documented ([52]).

([52]) Brohan, P., Kennedy, J.J., Harris, I., Tett S.F.B., and Jones P.D., 'Uncertainty estimates in regional and global observed temperature changes: a new dataset from 1850', J. Geophys. Res, 111.

The global temperature is calculated as the mean of the northern and southern hemisphere series, which helps prevent the value becoming dominated by the northern hemisphere, where there are more observations.

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 ±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.

The smoothed time-series is made by applying a 21-point binomial filter to the annual data. The filter is a weighted moving average of the data. Its weights are centred on the year of interest. In order to extend the simple smoothing to the very ends of the time-series it is necessary to either extend the data series, or shorten the filter. In either case the data near the endpoints will be treated differently to data in the middle of the series. Extending the data series can be done in a number of ways, but the method used here is simply to continue the series by repeating the final value.

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 dependence

Net imports are calculated as total imports minus total exports. Energy dependence 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:

$$\mathrm{ECHP} = C \cdot H$$

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.

Renewable energy 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.

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), and 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 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 and electricity. The CO_2 taxes are included under energy taxes as it is often not possible to identify CO_2 taxes separately in tax statistics.

7 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' (overall objective of the EU Sustainable Development Strategy for the key challenge 'sustainable transport')

Overview of main changes

Overall, the changes since 2000 concerning sustainable transport show a rather unfavourable picture although with some favourable trends. The picture presented here is thus less harsh than that presented in the previous edition of this report, although this is largely due to the tempering effect of the economic crisis, which has had the effect of reducing the demand for transport and its negative impacts.

Reductions in energy consumption and greenhouse gas emissions between 2007 and 2008 are a consequence of the economic crisis rather than a steady long run trend towards absolute decoupling. Even if there has been progress in decoupling transport and its energy consumption from economic development, the decoupling has been only relative. Furthermore, neither freight nor passenger transport has shown any shift towards modes with lower environmental impacts. There have been substantial decreases in the average CO_2 emissions of new cars and in road accident fatalities even if the objective of halving fatalities between 2001 and 2010 is unlikely to be achieved. The continuing downward trend in emissions of nitrogen oxides and particulate matter since 2000 has even accelerated.

Table 7.1: Evaluation of changes in the sustainable transport theme *(EU-27, from 2000)* (1)

Level 1	Level 2	Level 3
	Transport and mobility	
Energy consumption of transport relative to GDP	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
	Transport impacts	
	Greenhouse gas emissions from transport	Average CO_2 emissions per km from new passenger cars (***)
		Emissions of NO_x from transport
	People killed in road accidents (**)	Emissions of particulate matter from transport

(*) From 2004. (**) From 2001. (***) From 2007.

(1) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

Energy consumption of transport has grown slightly slower than GDP

The energy consumption of transport has grown slightly more slowly than the economy since 2000 and thus the ratio between energy consumption and GDP fell moderately between 2000 and 2009, indicating a minor relative decoupling between economic development and the energy consumption of transport. However, the link between the two is still apparent from the parallel drop in energy consumption as the economy stalled in 2008.

Transport and mobility

Increased share of road in freight transport

Absolute decoupling between freight transport and the economy

Relative decoupling of passenger transport and GDP

Between 2000 and 2009 the modal share of inland road freight transport in the EU climbed to 77.5 %, as the shares of rail and inland waterway transport decreased slightly over the same period. These changes were accompanied by increasing transport performance (tonne-km) between 2000 and 2007, and it was only in 2008 that freight performance started to fall in line with the lower economic growth resulting from the economic crisis. Freight transport fell further in 2009, leading to an absolute decoupling between economic growth and freight transport over the period 2000 to 2009.

The modal shares in passenger transport remained rather stable between 2000 and 2008, although there were minor increases of car and rail transport (accounting for 83.3 % and for 7.3 % respectively in 2008) at the expense of a slight decrease in the share of buses and coaches. Passenger transport volumes in the EU followed a similar development to those of freight transport, although the decrease of 0.4 % in 2008 was more moderate than that of freight transport, which fell by 1.4 %. As passenger transport volumes grew at a lower rate than GDP during this period, there was a relative decoupling between passenger transport volumes and GDP.

Road still takes the major share of infrastructure investment

Prices for road and rail transport services have grown faster than air transport

Although the share of road and airport infrastructure investments fell from 66 % in 2000 to 59 % in 2003, it climbed to 68 % in 2009. A converse pattern of development was observed for the shares of investments in rail, inland waterways and sea ports, which fell from 34 % to 32 % over the same period.

Between 2000 and 2010 prices for passenger transport services for road, rail and air transport services all increased substantially, albeit at different rates. The highest annual price increase was recorded for road passenger transport services (i.e. buses and coaches) with an average of 4.2 %, followed by rail (4.0 %) and air (2.8 %). Prices for the operation of personal transport equipment and purchase costs of vehicles increased by an average of 3.5 % and 0.6 % respectively between 2000 and 2010. Thus, in relative terms, prices increased less for road transport with private vehicles and aviation, the latter being the transport mode with the fastest growing energy consumption and emissions of greenhouse gases.

Transport impacts

Growth in greenhouse gas emissions from transport has slowed down

Progress in reducing average CO_2 emissions of new car fleet

The steady decrease of air pollutants accelerated in 2008

Deaths due to road accidents continue to fall

Between 2000 and 2009 greenhouse gas (GHG) emissions from transport in the EU grew more slowly than over the period 1990 to 2000. As a consequence of the reduced transport demand during the economic crisis, there were substantial reductions of transport GHG emissions in 2008 (-1.7 %) and 2009 (-2.8 %).

As road dominates the total GHG emissions of transport, the development of the average CO_2 emissions of new cars plays a crucial role in reducing overall GHG emissions from transport. Some progress has been achieved and there was an average annual reduction of 4.2 % between 2007 and 2009 in the EU, with new cars emitting an average of 145.7 grams of CO_2 per km in 2009. The current reduction rates seem to be sufficient to meet the target of 130 grams of CO_2 per km by 2015.

In contrast to the growing emissions of GHGs, emissions of noxious air pollutants such as oxides of nitrogen (NO_x) and particulate matter (PM) have been steadily falling since 1990, due to the progressive tightening of emission standards. Current levels of the emissions of NO_x ([2]) and PM2.5 ([3]) are more than 30 % lower than they were in 1990. In the figures from 2008 it is apparent that this process has even been hastened by the falling transport volumes resulting from the economic crisis.

([2]) The oxides of nitrogen, nitric oxide (NO) and nitrogen dioxide (NO_2), are acidic gases, damaging to human health and the environment.
([3]) Fine particulate matter with an average aerodynamic diameter of up to 2.5μm. It is associated with circulatory disease in human beings.

Measures to reduce road traffic accident fatalities within the EU have led to the number of people killed being more than halved since 1991. Progress between 2007 and 2009 has been especially strong, and this has been linked to financial insecurity resulting from the economic crisis. However, progress lags behind what would be necessary to cut road fatalities by 50 % between 2001 and 2010.

Transport and sustainable development

International trade and passenger flows build on a performing transport system

Transport systems form the backbone of today's economy and are important for economic growth

Transport connects production sites with sales points; transport allows families and friends to unite. More than ever, companies and individuals are taking advantage of the huge benefits of transport systems. Transport performance in the European Union is still increasing whether one looks at tonne-kilometres or passenger-kilometres. Without high-capacity transport systems neither international trade nor today's passenger flows could have attained current levels.

From an economic point of view, the possibility of easily transporting goods and passengers is one of the most relevant drivers behind ongoing globalization. Transport allows companies to spread their production sites all over the globe, to exploit economies of scale and to benefit from comparative advantages. The extensive division of labour subsequently leads to increasing trade volumes between different regions and countries. Transport infrastructure and transport systems are the backbone of all commodity and passenger flows in the EU and globally, and the availability of transport is an essential condition for trade and economic growth.

Beside the positive impacts growing transport flows come together with direct impacts on various aspects of sustainable development

These advantages are not without a price. Growth in transport activities is increasingly putting pressure on nature and society through direct impacts:

Transport activities result in emissions of greenhouse gases, air pollutants, noise etc., with subsequent effects on climate, environment, and human beings.

The operation of transport means increases in energy consumption.

Transport infrastructures involve large scale fragmentation of landscapes and ecosystems.

Growing transport flows come together with more vehicles, more congestion as well as fatalities and injuries.

The close relation of transport and economic growth implicate further negative impacts

There are also indirect impacts of transport on sustainable development. By influencing the intensity and the pace of today's economic interactions, transport has become a driver of economic growth itself. How closely transport and economic activities are linked is revealed by the recent economic crisis that has led to a dramatic decrease of transported goods.

Transport effects all of the three axes of sustainable development

In analysing transport in the context of sustainable development it is necessary to think in terms of trade-offs between transport as a driver of economic growth and its simultaneous negative impacts.

Economic sustainability demands for the right framework

In contributing to economic growth and in facilitating employment two essential abilities of transport lie within the area of economic sustainability. Furthermore, relative prices of transport in general and of distinct transport modes in particular do play a key role in the choices of households and companies. By setting the right framework and by covering the true costs with a mix of policy measures, a balanced shift towards more environmentally friendly transport modes can be achieved.

Pricing of the external costs of transport could facilitate a decoupling of growth and transport

Direct emissions from the different transport activities affect environmental sustainability. Such extra burden put on the environment also represents costs not fully covered by the relevant transport prices. They hinder a joint development of transport and environment. Efforts to price the external costs of transport facilitate a decoupling of economic growth and the demand for transport and thus contribute to emission reductions.

A reduction of road transport victims can add to social sustainability

Finally, transport also matters for social sustainability. Transport allows people to meet with each other and therefore adds to societal cohesion. Passenger transport provides access to basic services such as health and education and is essential for tourism. Hence, transport also helps to improve quality of life and overall well-being. However, transport accidents impose considerable costs on society, especially in terms of injuries and death.

Minimising the undesirable impacts of transport is the overall objective of sustainable transport

Transport plays a fundamental role in modern society. It has links to a broad range of other topics such as climate change, natural resources, socioeconomic development, public health and social inclusion. These relations as well as the direct impacts of transport are controversially discussed when policy decisions for future transport systems are taken and when the costs and benefits from transport are calculated. The overall sustainable transport objective of the EU Sustainable Development Strategy is to minimise the undesirable impacts and to ensure that the transport system meets the economic, social and environmental needs.

Box 3.1: Objectives related to sustainable transport in the EU 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 environmentally 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_2 emissions from light duty vehicles, the average new car fleet should achieve CO_2 emissions of 140g/km (2008/09) and 120g/km (2012) ([4]).
- Halving road transport deaths by 2010 compared to 2000.

Further reading on sustainable transport

Commission White Paper, *Roadmap to a Single European Transport Area: Towards a competitive and resource efficient transport system*, COM(2011) 144

European Commission, *Evaluation of the Common Transport Policy (CTP) of the EU from 2000 to 2008 and analysis of the evolution and structure of the European transport sector in the context of the long-term development of the CTP*, Studies, 2009

European Environment Agency, *Towards a resource-efficient transport system: TERM 2009*, Publications Office of the European Union, Luxembourg, 2010

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

International Transport Forum, *Transport Outlook 2010: the Potential for Innovation*, OECD/ITF, 2010

([4]) As the review in 2007 made apparent that these goals could not be reached by 2012, the new target elaborated in 2009 foresees CO_2 emissions of 130g/km in 2015 with phase-in starting in 2012. Additionally, a long-term target of 95 g/km has been set for 2020.

Energy consumption of transport relative to GDP

Between 2000 and 2009 the energy consumption of transport in the EU grew on average slightly slower than GDP, signifying a small relative decoupling

Commentary

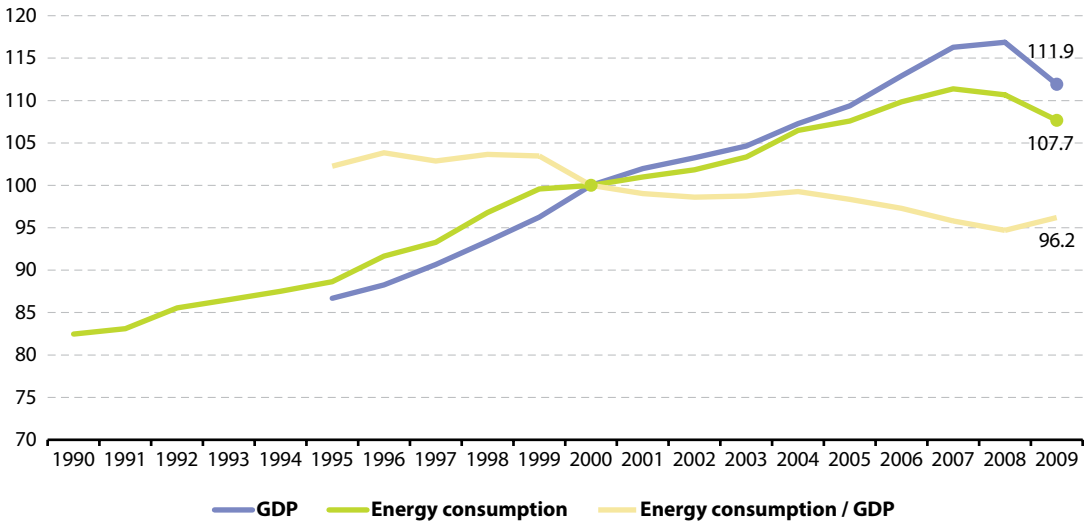
Between 2000 and 2009 the energy consumption of transport per unit of GDP decreased moderately

This indicator compares the growth of transport energy consumption with the growth of GDP. Between 2000 and 2009, the energy consumption of transport in the EU increased by 8 %, whereas GDP grew at the somewhat faster rate of 12 %. As a result, the energy consumption of transport per unit of GDP decreased by an average of 0.4 % per year, indicating a small relative decoupling.

The reduction in energy consumption in 2008 and, especially, 2009 is evidently a consequence of the economic crisis and corresponding slowdown in economic activity as reflected in GDP. Even if 2010 has seen a small upturn in GDP, short-term data on sales of transport fuels indicate that consumption of energy by transport continued to fall in 2010.

Road transport accounted for 82.5 % of the 365 million tonnes of oil equivalent consumed in the EU in 2009, followed by air transport with a share of 13.8 %. These two modes were not only responsible for the largest share of total energy consumption in 2009; they have also grown substantially since 2000.

Figure 7.1: Energy consumption of transport relative to GDP, EU-27
(index 2000 = 100)



Period evaluated:
2000-2009
Average annual rate of change
Energy consumption/GDP:
-0.4 %
Energy consumption:
+0.8 %
GDP:
+1.3 %

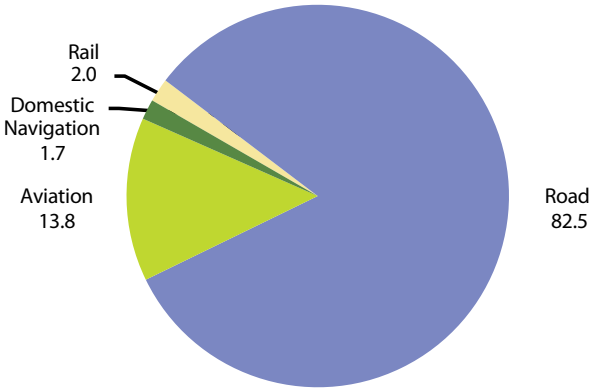
NB: Energy consumption of transport includes all modes of transport, with the exception of maritime and pipeline transport.

Source: Eurostat (online data codes: tsdtr100, tsdtr250, nama_gdp_k)

Figure 7.2: Energy consumption of transport, by mode, EU-27, 2009 (%)

Key figures in 2009

(million tonnes of oil equivalent):
Road: 300.5
Aviation: 50.5
Rail: 7.3



Source: Eurostat (online data code: tsdtr250)

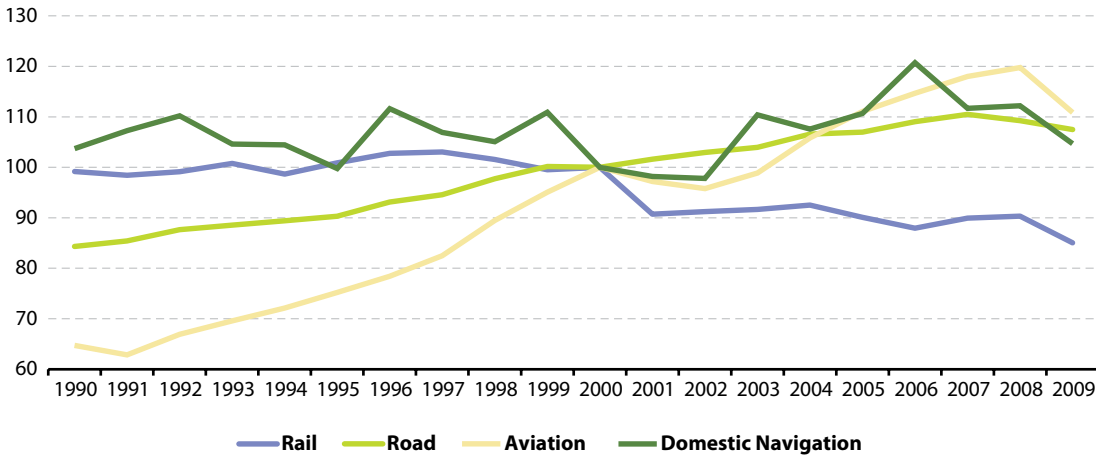
The share of air transport is rising

Moderate decreases of energy consumption for rail and inland navigation

While the energy consumption of road transport rose by an annual average of 0.8 %, air transport saw the highest growth of all modes with an annual average of 1.1 % between 2000 and 2009. This is reflected in the growing share of air transport, which is even more remarkable, because in the aftermath of the terrorist attacks in New York in September 2001, energy consumption in air transport decreased in 2001 and 2002. Domestic navigation grew at the modest annual average rate of 0.5%. On the other hand, over the same period, the energy consumption of rail transport fell by 1.8% per year on average. The energy consumption of all modes of transport fell in 2009.

Figure 7.3: Energy consumption of transport, by mode, EU-27 (index 2000 = 100)

Change over period 2000-2009:
Average annual rate of change
Aviation: +1.1 %
Road: +0.8 %
Domestic navigation: +0.5 %
Rail: -1.8 %

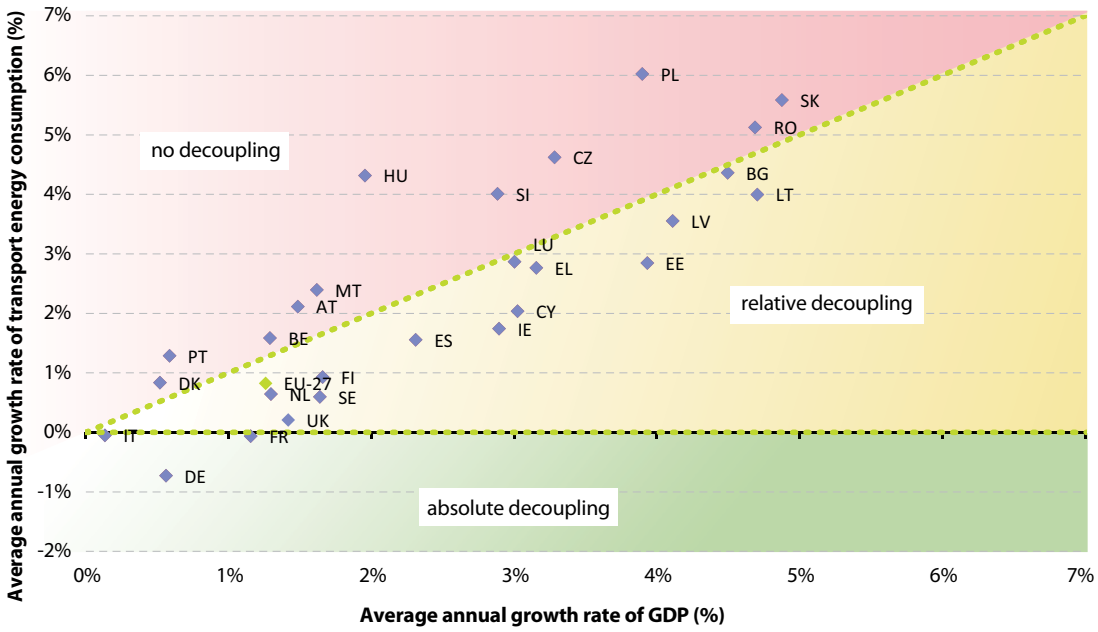


Source: Eurostat (online data code: tsdtr250)

The majority of EU Member States only show relative decoupling

Only three EU Member States (Germany, France and Italy) reported an absolute decoupling of energy consumption of transport and GDP growth. This is the case when energy consumption decreases (or does not increase) while GDP is growing. Many countries exhibit lower growth rates for transport energy consumption than for GDP which is described as relative decoupling. At the other end of the scale, for Poland, Hungary, Slovenia and the Czech Republic, the average annual growth rates of energy consumption substantially exceeded GDP growth rates between 2000 and 2009. These latter countries do not show any decoupling effects. In some cases this may be due to high shares of transit transport, or lower fuel prices compared to neighbouring countries.

Figure 7.4: Energy consumption of transport relative to GDP, by country
(Average annual rate of change 2000-2009, %)



Key figures in decoupling of transport energy consumption from GDP between 2000 and 2009

Absolute decoupling:

3 countries (DE, FR, IT)

Relative decoupling:

13 countries (BG, EE, IE, EL, ES, CY, LU, LV, LT, NL, FI, SE, UK)

No decoupling:

11 countries (BE, CZ, DK, HU, MT, AT, PL, PT, RO, SI, SK)

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

Source: Eurostat (online data codes: tsdtr250, nama_gdp_k)

Indicator relevance

Today's mobility of people and goods requires energy, regardless of the transport mode used. However, the energy consumption of the different transport modes varies substantially. As the consumption of energy affects the environment, it is an aim of sustainable development to fulfil the demand for mobility with low energy consuming modes of transport.

The growing consumption of energy in the transport sector is strongly linked to different policy issues: it can aggravate the security of energy supply and influence the production and consumption of renewables. To an increasing extent, transport energy consumption has effects on 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 emissions from land use. Security of food supply is also affected when plants cultivated for energy compete with food plants, especially in developing countries. Finally, energy use for transport leads to air pollution.

Two factors that cause the growth of energy consumption by transport should be considered: a growing demand of mobility and secondly a shift to more energy-intensive transport modes. Therefore, 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 with regard to security of supply and sustainability ([5]). In 2007, the European Council agreed to a target of increasing energy efficiency by 20 % by 2020 compared to the business-as-usual growth ([6]).

([5]) 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, p. 5.
([6]) Commission communication, *Action plan for energy efficiency: Realising the potential*, COM(2006) 545.

Definition

This indicator is defined as the ratio between the energy consumption of transport and GDP (in chain-linked volumes to the reference year 2000 at 2000 exchange rates). It covers energy consumed by all types of transport (road, rail, inland navigation and aviation), including commercial, individual and public transport, with the exception of maritime and pipeline transport.

Modal split of freight transport

The modal share of road freight transport (measured in tonne-km) in the EU increased between 2000 and 2009. A modal shift towards more environmentally friendly transport modes could not be observed

Commentary

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

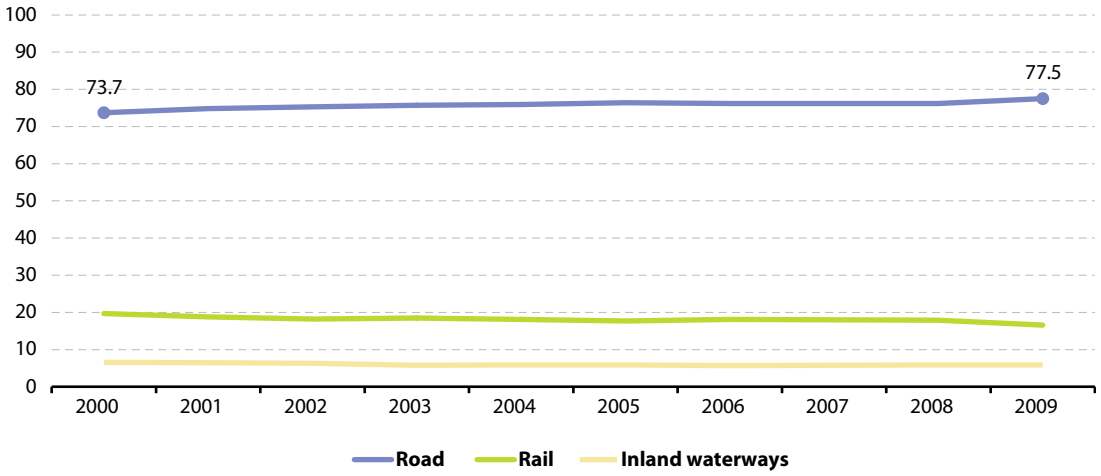
The modal split of freight transport gives the shares of different transport means measured in tonne-km. Between 2000 and 2009, the modal share of road inland freight transport in the EU increased from 73.7 % to 77.5 %. In contrast the modal share of rail transport fell to 16.6 % in 2009, and the share of inland waterways to 5.9 %.

The largest increases in road shares could be observed in some of the countries of the 2004 and 2007 EU enlargements. The development in the EU-15 was equivocal as some countries have reported small increases in the road share, and others small decreases.

Rail transport has high modal shares in Eastern Europe

Although the modal split of rail transport decreased the most in the new Member States, rail transport still plays an important role for freight transport in these countries and their modal shares for rail transport are amongst the highest in the EU.

Figure 7.5: Modal split of freight transport, EU-27
(% in total inland freight tonne-km)



Period evaluated:
2000-2009 (road transport)
Average annual rates of change:
Road: +0.6 %
Rail: -1.9 %
Inland waterways: -1.2 %

NB: Eurostat estimates; break in series in 2004 for rail and inland waterways.

Source: Eurostat (online data code: tsdtr220)

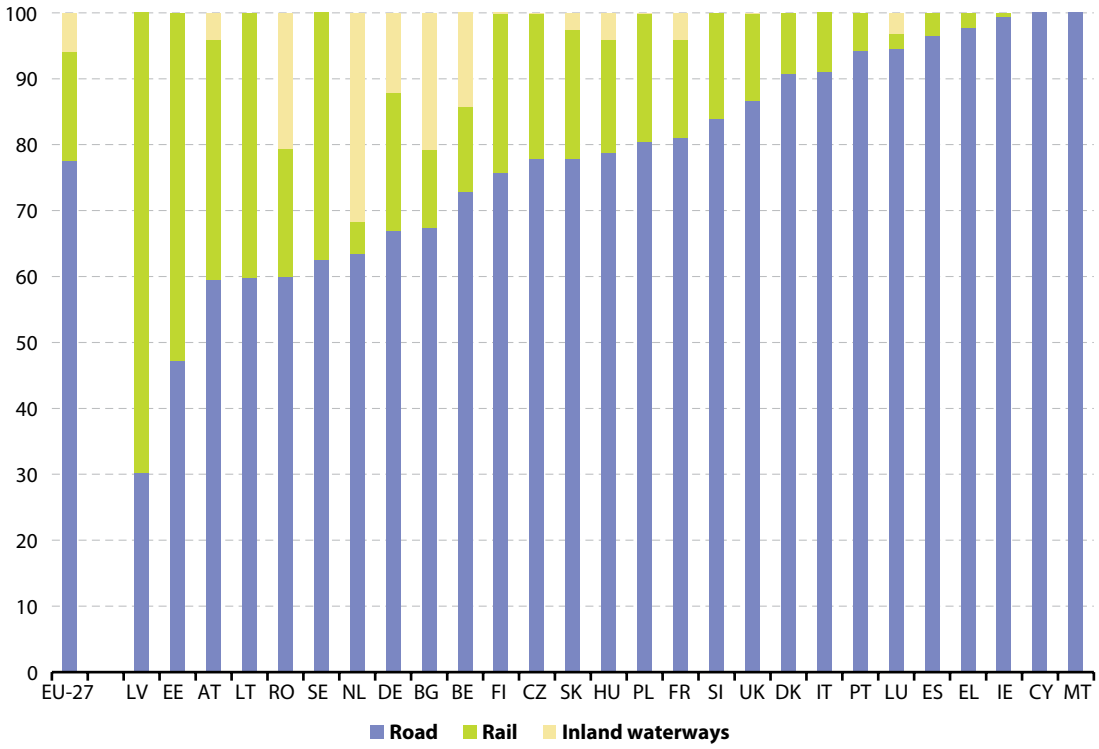
Figure 7.6: Modal split of freight transport, by country, 2009
(% in total inland freight tonne-km)

Key figures in 2009 (road transport):

Highest: Cyprus and Malta: 100 %

Lowest: Latvia: 30.2 %

EU-27 average: 77.5 %



Source: Eurostat (online data code: tsdtr220)

Indicator relevance

Changes in demand for the different freight transport modes, and hence also in modal split, have a direct impact on the energy consumption for transport as well as on air pollution, environment and health.

This indicator monitors the objective of the EU Sustainable Development Strategy of 'achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system'. The ongoing predominance of road transport nevertheless shows the difficulties of such a shift as road transport remains the mode with the largest infrastructure.

Definition

This indicator is defined as the percentage share of each mode of transport in total inland transport expressed in tonne-kilometres (tkm). 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 passenger car is by far the most important means of inland passenger transport in the EU and its share increased very slightly between 2000 and 2008. No shift towards more environmentally friendly transport modes has taken place

Commentary

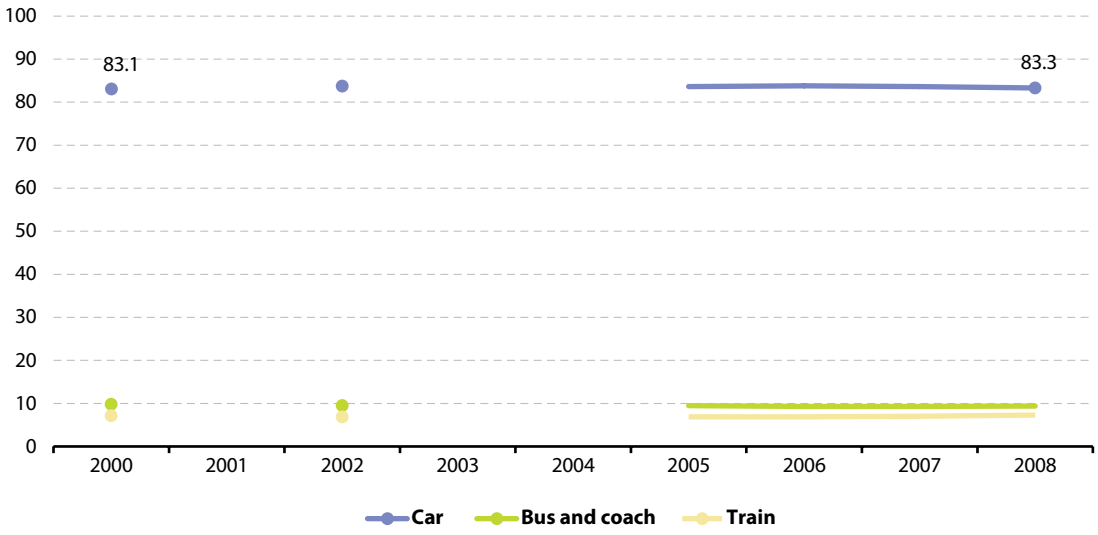
The modal split of passenger transport gives the share of different transport modes measured in passenger-kilometres. The share of transport by passenger car in the EU as a whole stood at 83.3 % in 2008, which differed little from its share of 83.1 % in 2000. Similarly the shares of bus and coach transport and rail transport changed little over the period 2000 to 2008.

The highest increases of passenger car transport could be observed in countries that showed shares of road transport below average in 2000. The share of transport by car appears to have more or less stabilised, and there is no indication of a shift towards more environmentally friendly modes.

Passenger transport by car dominates in the EU

There has been no shift towards more environmentally friendly modes

Figure 7.7: Modal split of passenger transport, EU-27
(% in total inland passenger-km)



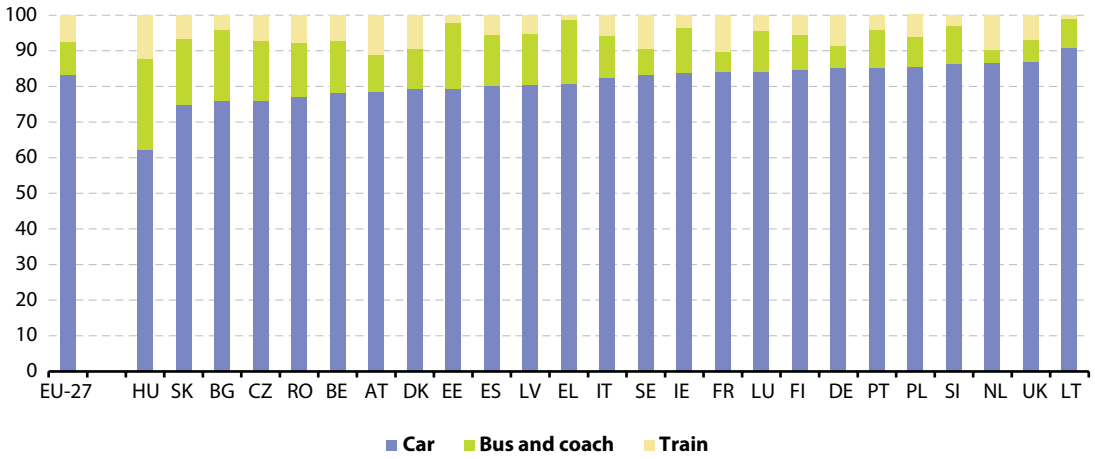
Period evaluated:
2000-2008 (car)
Average annual rates of change:
Car: +0.03 %
Bus and coach: -0.5 %
Train: +0.3 %

NB: Estimated data; no data for 2001, 2003 and 2004.

Source: Eurostat (online data code: tsdtr210)

Figure 7.8: Modal split of passenger transport, by country, 2008
(% in total inland passenger-km)

Key figures in 2008 (car):
Highest: Lithuania: 90.9 %
Lowest: Hungary: 62.1 %
EU-27 average: 83.3 %



NB: Estimated data for EU-27 and most Member States.

Source: Eurostat (online data code: tsdtr210)

Indicator relevance

Changes in demand for different passenger transport means, and hence also in modal split, have direct impacts on the energy consumption of transport as well as on air pollution, environment and health.

This indicator monitors the objective of the EU Sustainable Development Strategy of 'achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system'. The ongoing predominance of road transport nevertheless shows the difficulties of such a shift as road transport remains the mode with the largest infrastructure.

Definition

This indicator is defined as the percentage share of each mode of transport in total inland transport, expressed in passenger-kilometres (pkm). 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. The coverage of passenger transport for many countries is incomplete, mainly due to lack of data on transport by passenger car. Note further, that domestic air transport and human powered mobility (walking, cycling) is not included due to lack of comparable data.

Volume of freight transport relative to GDP

Due to a significant drop in freight transport volumes in 2009, they fell below their 2004 figures, while GDP on average grew over the period from 2004 to 2009. The resulting absolute decoupling between freight transport volumes and economic growth should however be interpreted with caution, as it presumably is a temporary effect of the economic crisis

Commentary

Volumes of freight transport in the EU collapsed in 2009 as a result of the economic crisis

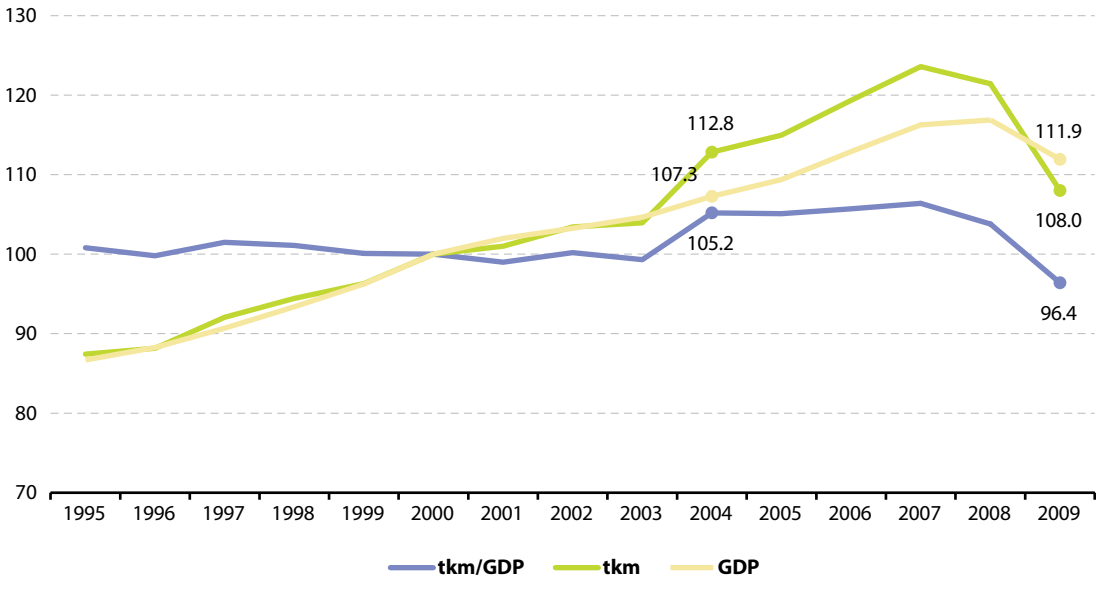
The absolute decoupling observable between 2004 and 2009 may therefore be a temporary effect of the crisis

By measuring the ratio of tonne-km and GDP over time this indicator shows the extent to which freight transport is coupled to economic growth. Over the period from 2004 to 2009 absolute decoupling is observable: while freight transport measured in tonne-km fell by an average of 0.9 % per year, GDP grew by 0.9 %.

The economic downturn, reflected in the figures for 2008 and 2009, is the main cause of this. While GDP growth slowed down in 2008 and fell by 4.2 % in 2009, freight transport volumes declined by 1.7 % in 2008 and collapsed by 11.1 % in 2009. In contrast, no decoupling could be observed for the pre-crisis period from 2004 to 2007, when growth in the volumes of freight transport exceeded GDP growth. The decoupling observed for 2008 to 2009 therefore seems to be a temporary effect of the economic crisis rather than an actual turnaround in freight transport trends.

A further explanation of long-term decoupling effects in the EU may result from the ongoing globalisation that fosters the outsourcing of production sites, amongst other things. The longer transport chains of imported products get, the larger transport volumes outside the EU become. These distances are not covered by statistics with the EU in focus.

Figure 7.9: Volume of freight transport relative to GDP, EU-27
(index 2000 = 100)



Period evaluated: 2004-2009
Average annual rate of change
tkm/GDP: -1.7 %
tkm: -0.9 %
GDP: +0.9 %

NB: Eurostat estimates; break in series in 2004.

Source: Eurostat (online data codes: tsdtr230, nama_gdp_k)

Indicator relevance

Freight transport is the backbone of the economic activities of the EU and the demand for transport is closely connected to economic development. Increasing GDP in the EU still leads to increasing freight transport volumes, and vice versa.

An operational objective of the EU Sustainable Development Strategy is 'decoupling economic growth and the demand for transport with the aim of reducing environmental impacts'. A falling tkm/GDP curve means decoupling of transport volumes and economic growth, a rising tkm/GDP curve shows the opposite.

Definition

This indicator is defined as the ratio between the volume of inland freight transport measured in tonne-kilometres and GDP (in chain-linked volumes to the reference year 2000 at 2000 exchange rates). 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.

Volume of passenger transport relative to GDP

In the EU, higher GDP growth compared to volume of passenger transport resulted in a relative decoupling effect between 2000 and 2008

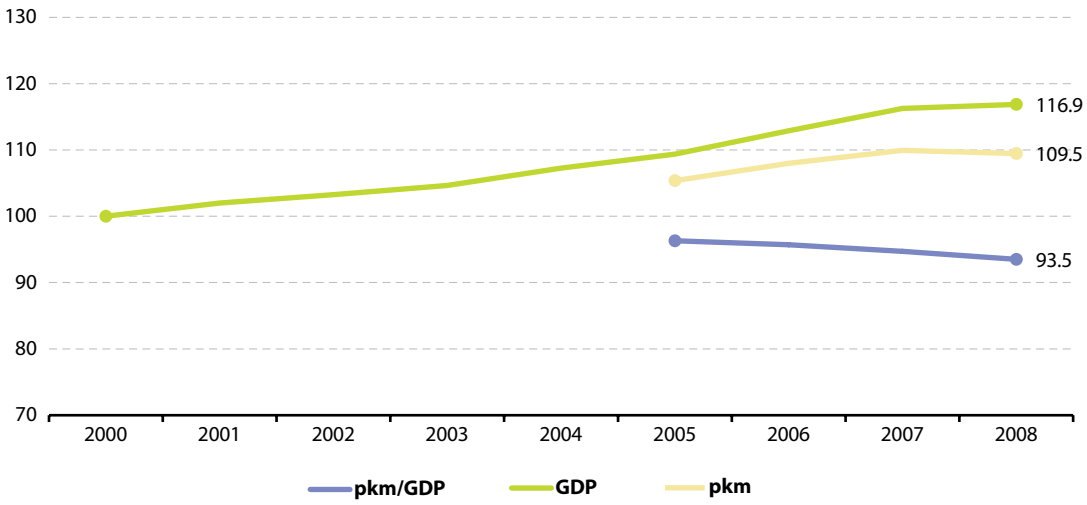
Commentary

Land passenger transport growth is lower than GDP development

The indicator relates volume of land passenger kilometres (i.e. kilometres completed by car, bus, coach and train) to GDP. Between 2000 and 2008 GDP growth exceeded the growth of passenger transport volumes signifying a small relative decoupling effect. While passenger transport volumes increased by 1.1 % per year, GDP grew by 2.0 % per year.

The effects of the economic crisis have led to a GDP growth of only 0.5 % in 2008, which is lower than that of previous years. As land passenger transport volumes have decreased by 0.4 % the ratio of pkm to GDP has fallen by 1.3 %. However, this decrease is rather a consequence of the economic crisis than a sign of a sustainable trend of decoupling. There is also the possibility of a substitution of land transport by air transport, which is not covered by this indicator.

Figure 7.10: Volume of passenger transport relative to GDP, EU-27
(index 2000 = 100)



Period evaluated:
2000-2008
Average annual rate of change
pkm/GDP: -0.8 %
pkm: +1.1 %
GDP: +2.0 %

NB: Eurostat estimates.

Source: Eurostat (online data codes: tsdtr240, nama_gdp_k)

Indicator relevance

An operational objective of the EU Sustainable Development Strategy is 'decoupling economic growth and the demand for transport with the aim of reducing environmental impacts'. A falling pkm/GDP curve means decoupling of transport volumes and economic growth, a rising tkm/GDP curve shows the opposite.

Definition

This indicator is defined as the ratio between the volume of inland passenger transport measured in passenger-kilometres and GDP (in chain-linked volumes to the reference year 2000 at 2000 exchange rates). It includes transport on national territory by passenger car, bus and coach, and train.

Investment in transport infrastructure

Between 2000 and 2009 the share of investments in the infrastructure of transport modes with lower environmental impacts (rail, maritime and inland waterways) decreased slightly. Road infrastructure investments remain dominant in the EU

Commentary

The share of investment in infrastructure for environmentally friendly transport modes declined slightly in 2009

This indicator shows the relative share of investments in infrastructure for each transport mode in total investments in transport infrastructure. Although important data (for example for Bulgaria, Greece and 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 relatively environmentally friendly transport modes.

A substantial cut in investments between 2007 and 2008 led to lower financing for all transport modes. Although the distribution of investment between the different transport infrastructures did not change significantly between 2007 and 2009, some modes did experience changes over the period 2000 to 2009. The share of road infrastructure investments fell from 60 % in 2000 to 52 % in 2003, but has since returned to 62 %. Investments in rail infrastructure have been in decline since 2003.

Investments in transport infrastructure do not necessarily increase capacities for transport as they can also be invested in infrastructure safety improvements. This would then add to the overall sustainability of transport. However, the indicator does not allow for separating such safety investments. They are included in the overall investment sums.

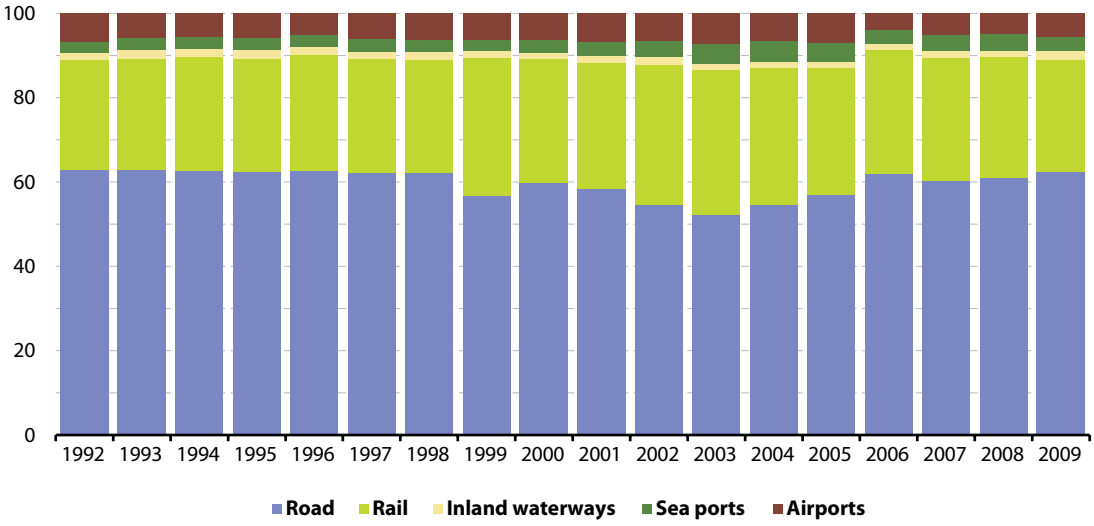
Figure 7.11: Investment in transport infrastructure by mode, EU (%)

Period evaluated:
2000-2009
(share of rail, inland waterways and sea ports)

Average annual rate of change:
-0.6 %

Share in 2000:
33.8 %

Share in 2009:
32.1 %



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

Source: International Transport Forum.

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 environmentally friendly transport modes' can be realised.

The 'Greening Transport' communication 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 Member States for transport infrastructure for road, rail, air transport, sea ports and inland waterways at current prices.

Passenger transport prices

In general, passenger transport prices in the EU rose faster than the rate of inflation between 2000 and 2010. Road transport services experienced the largest price increase whilst costs for vehicle purchases rose the least

Commentary

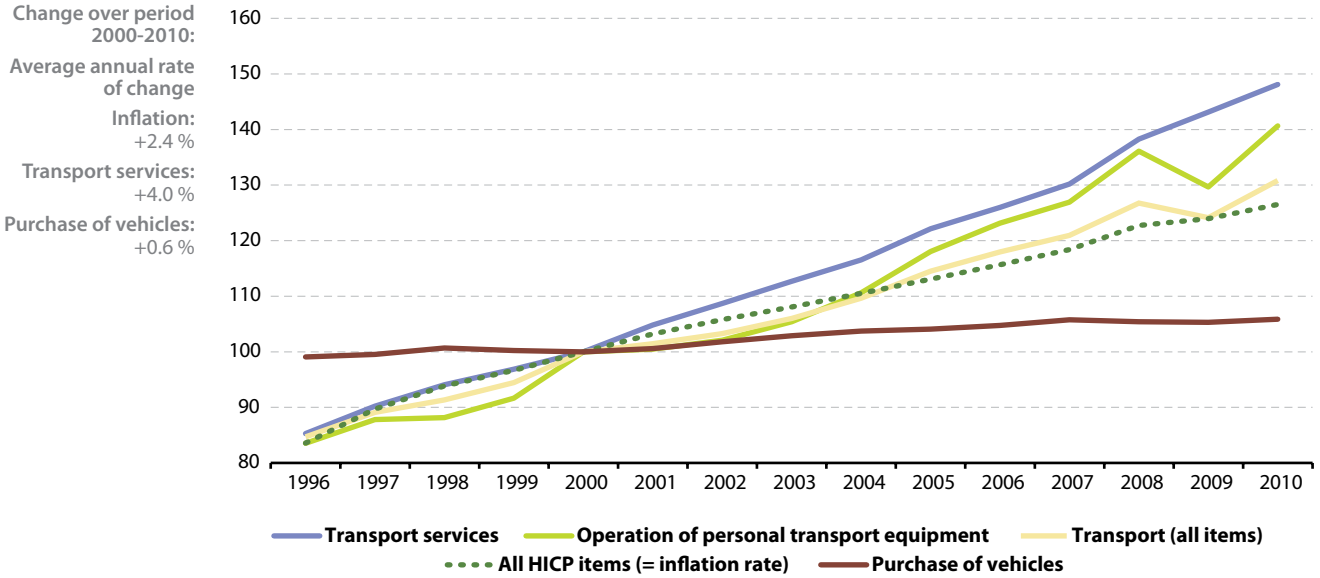
Prices for road and rail transport services have increased faster than those for air transport

Passenger transport price indices allow for comparison of price developments of different transport modes. Between 2000 and 2010 prices for passenger transport services by road, rail and air all rose faster than the headline inflation rate of 2.4 % (per year). The highest annual price increase with an average of 4.2 % was recorded for road passenger transport services (i.e. buses and coaches), followed by rail and air with 4.0 % and 2.8 % respectively. Whilst prices of air passenger transport have been growing slower than the prices of the other modes, they have shown more volatility (see Figure 7.13), due to greater sensitivity to external factors such as competition within the sector and fluctuating fuel prices.

Prices for purchasing vehicles have increased very little

Most passenger transport by road is performed by private vehicles rather than by transport services. In order to have a balanced view of price developments in the transport sector, purchasing costs of vehicles as well as operational expenses (e.g. fuel, maintenance and spare parts) have to be considered. Prices for the operation of personal transport equipment increased on average by 3.5 % per year between 2000 and 2010. Prices for the purchases of vehicles, on the other hand, grew on average by only 0.6 % per year. Thus, costs for private transport have increased rather less than those for transport ervices and also less than the overall inflation rate.

Figure 7.12: Annual harmonised index of consumer prices for transport, EU-27 (index 2000 = 100)



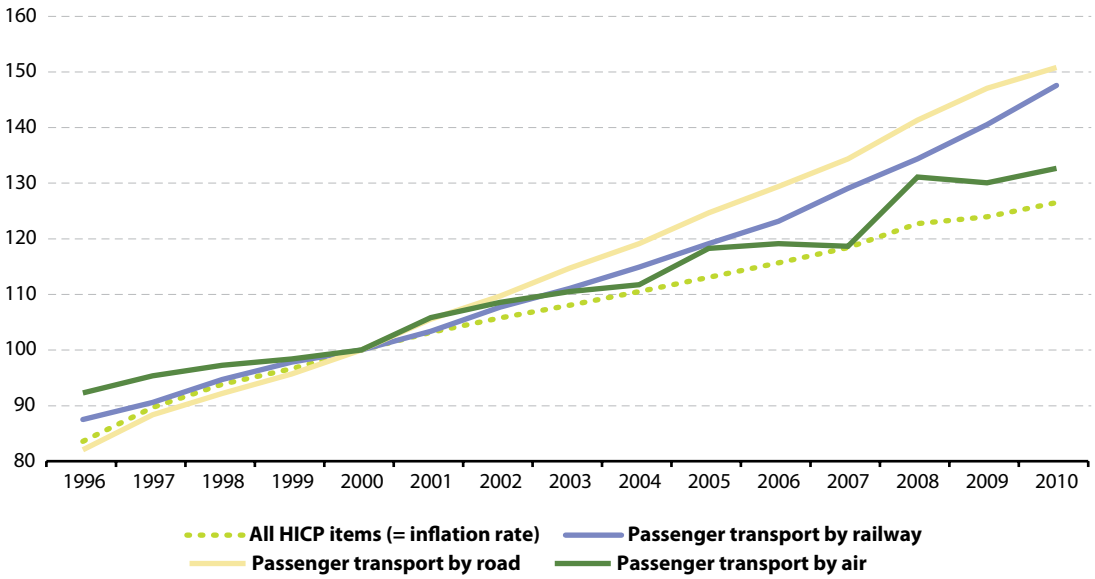
NB: 1996-1998 data are estimates, 2010 data are provisional estimates.

Source: Eurostat (online data code: tsdtr310)

Transport prices have risen faster than the headline inflation rate

From 1996 to 2000, only prices for passenger transport services by road increased more than the headline inflation rate. This situation changed for the period from 2000 to 2010, and all passenger transport services have become more costly compared to other goods and services. Relative prices play an important role for achieving objectives of the Sustainable Development Strategy. They are one of the key factors influencing the demand for transport and the choice of travel mode. Looking at these price developments, one can conclude that transport in general has become less attractive.

Figure 7.13: Annual harmonised index of consumer prices for transport services, EU-27 (index 2000 = 100)



Change over period 2000-2010:
Average annual rate of change
Transport by railway: +4.0 %
Transport by road: +4.2 %
Transport by air: +2.8 %

NB: 1996-1998 data are estimates, 2010 data are provisional estimates.

Source: Eurostat (online data code: tsdtr310)

Indicator relevance

This is a contextual indicator, providing background information helpful to an understanding of the topic. Rising prices for transport can have positive implications on several environmental issues (climate change, air pollution, etc.) and as a result of changing relative prices between different transport modes, similar positive effects can arise. On the other hand there are also negative effects of rising transport prices. By providing access to basic services such as health, education, shopping, leisure and recreation, transport plays an important role in people's quality of life. Additionally, transport is essential for commuting to work and rising prices may be a hindrance for a person's chances and possibilities in life. Transport prices therefore have consequences for environmental sustainability as well as for social issues, such as access to labour markets and education.

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 ([7]), 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'.

Definition

This indicator shows the harmonised consumer price indices for passenger transport services, split into road, rail and air, as well as for purchases of vehicles and operation of personal transport equipment using 2005 as the base year. The Harmonised Indices of Consumer Prices (HICPs) are a set of European Union Consumer Price Indices calculated according to a harmonised approach and a single set of definitions. The HICP was launched in order to provide a comparable measure of consumer price inflation in the EU. It provides the only official measure of consumer price inflation in the euro-zone for the purposes of monetary policy.

([7]) Commission communication, *Greening transport*, COM(2008) 433, p. 2.

Greenhouse gas emissions from transport

Between 2000 and 2009 greenhouse gas emissions from transport (excluding international aviation and maritime) grew in the EU, even if at a lower rate than over the previous decade

Commentary

Greenhouse gases from transport are growing at a slower rate since 2000

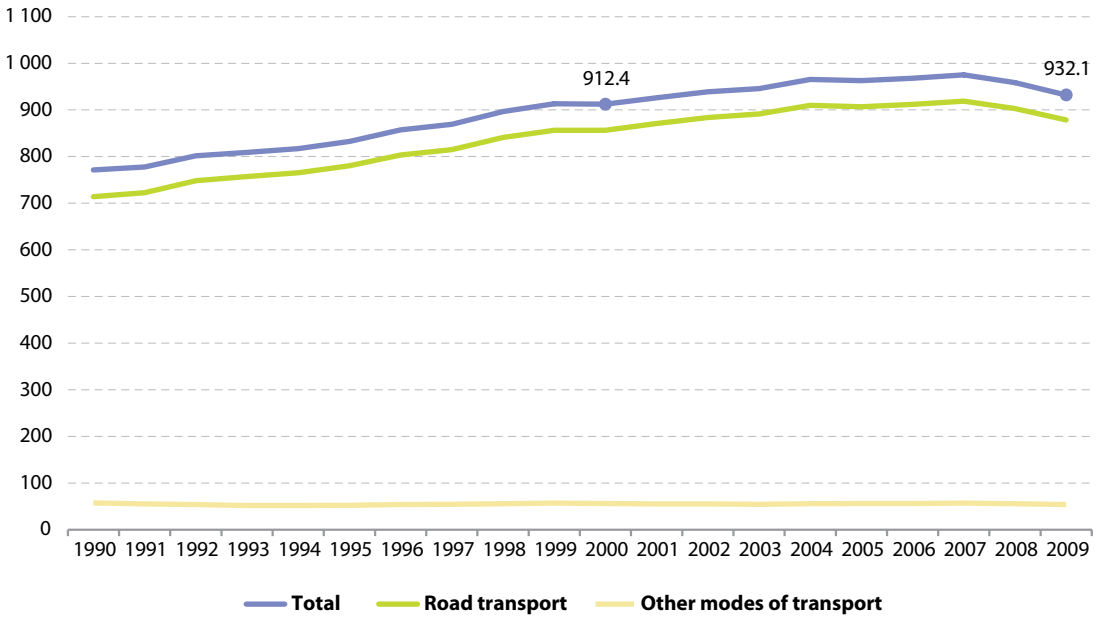
Transport (even when excluding international aviation and maritime) is an important emitter of greenhouse gases (GHGs), responsible for a share which has grown from 14 % of total EU emissions in 1990 to 20 % in 2008. It is the only major source category currently producing considerably more greenhouse gas emissions than in 1990.

GHG emissions from transport fell substantially in 2008 and 2009

Since 2000, the growth of transport greenhouse gas emissions has shown signs of slowing down: whilst the average annual growth rate was 1.7 % during the 1990s, it fell to 0.2 % over the period 2000–2009. Although there were minor dips in 2000 (by 0.1 %) and 2005 (by 0.2 %), for the first time in 18 years, greenhouse gas emissions from transport decreased substantially in 2008 (by 1.7 %) and 2009 (by 2.8 %). This decline reflects the economic downturn, which has led to a reduction in passenger and freight transport volumes (see the indicators 'volume of freight transport relative to GDP' and 'volume of passenger transport relative to GDP'), and may well prove to be a temporary phenomenon: it cannot yet be interpreted as a change in the longer term trend.

Figure 7.14: Greenhouse gas emissions from transport, EU-27
(million tonnes of CO_2 equivalent)

Period evaluated: 2000-2009 (total transport GHG emissions)
Annual average growth rate: +0.2 %
Relative change: +2.2 %
Absolute change: +19.7 million tonnes



Source: European Environment Agency, Eurostat (online data code: tsdtr410)

Indicator relevance

Due to their global impact, greenhouse gas emissions are one of the most important sources of negative environmental effects of transport. The accumulation of these gases in the atmosphere may have negative impacts on the climate, and therefore also affect biodiversity, soil erosion, water supply, water quality and the security of the food supply.

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. One 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 emits 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.

The EU has committed itself to achieving a 20 % reduction in greenhouse gas emissions by 2020 and a 30 % reduction if it is part of an international agreement ([8]). Prior to the 2009 Copenhagen Climate Conference, the Environment Council underlined that developed countries should reduce their GHG emissions below 1990 levels by 25-40 % by 2020 and by 80-95 % by 2050 ([9]). In order to achieve this goal an analysis carried out by the European Commission showed that a reduction of at least 60 % of GHGs by 2050 with respect to 1990 is required from the transport sector ([10]). An intermediate goal is to reduce GHG emissions from transport to around 20 % below their 2008 level by 2030. Policy options for achieving these reductions include a combination of more stringent CO_2 standards for new vehicles as well as full pricing of externalities and the elimination of tax distortions ([11]).

Definition

This indicator shows trends in the emissions from transport (road, rail, inland navigation and domestic aviation) of the greenhouse gases regulated by the Kyoto Protocol. Only three gases are relevant in the context of transport (carbon dioxide, methane, and nitrous oxide). These have been aggregated according to their relative Global Warming Potentials to give total greenhouse gas emissions expressed in terms of CO_2 equivalents.

([8]) Decision No 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.
([9]) Environment Council conclusions, *EU position for the Copenhagen Climate Conference (7-18 December 2009)*, 14790/09.
([10]) Commission White Paper, *Roadmap to a Single European Transport Area: Towards a competitive and resource efficient transport system*, COM(2011) 144.
([11]) Commission staff working paper, *Summary of the impact assessment*, SEC(2011) 359.

People killed in road accidents

Between 2001 and 2009 fatalities from road accidents in the EU fell by 19 485, representing a drop of 36 %. However, the objective of halving road fatalities between 2001 and 2010 is unlikely to be achieved

Commentary

EU has achieved steady decreases in road fatalities but the target is unlikely to be achieved by 2010

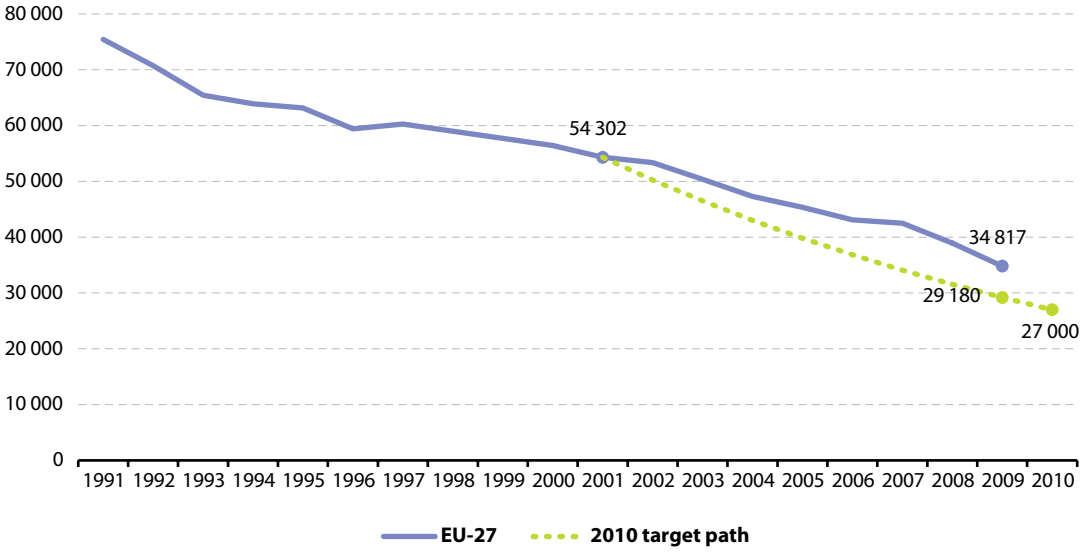
This indicator monitors the number of fatalities in road accidents and reflects safety in road traffic in general. Fatalities due to road accidents in the EU fell by approximately 2 300 per year between 1991 and 2009. From 2001 to 2009, casualties in road traffic fell on average by 5.4 % per year. Progress between 2007 and 2009 was especially strong, and this has been linked to financial insecurity resulting from the economic crisis ([12]).

The comparison of fatalities from road accidents between the EU-15 and new Member States shows clearly that they are converging. While there was a higher reduction of fatalities in the EU-15 between 2001 and 2009, this has changed in recent years. From 2008 to 2009, the new Member States achieved reductions in road fatalities by nearly 16 %, representing almost twice the rate achieved in the EU-15 countries.

Notwithstanding the progress made, the number of fatalities in 2009 was some 7 820 victims above the EU target seeking to reduce road fatalities by 50 % (to 27 000) between 2001 and 2010. At the average annual reduction rate since 2001, the target would be reached in 2014.

Figure 7.15: People killed in road accidents, EU-27
(Number of killed people)

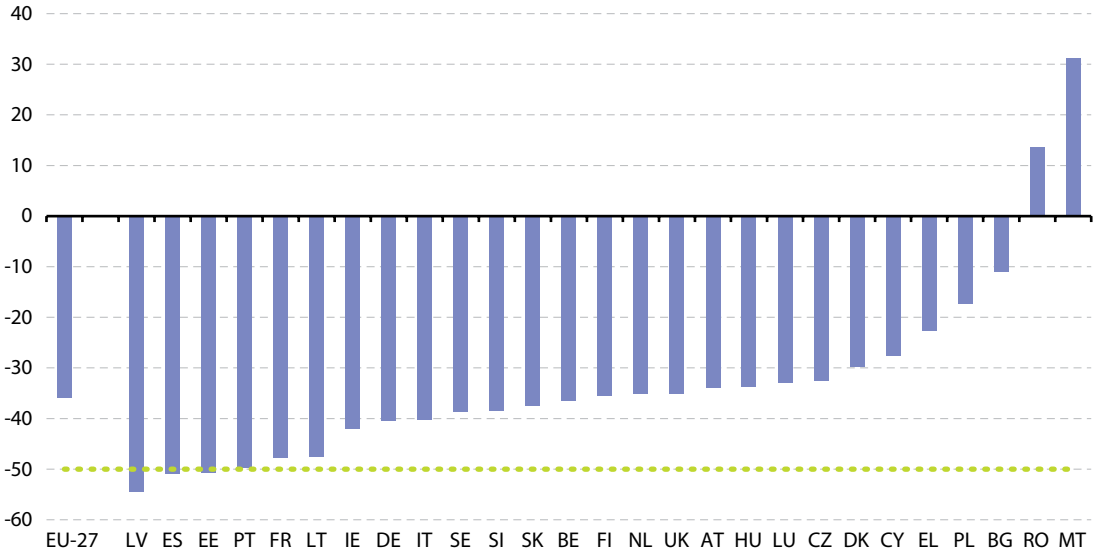
Period evaluated: 2001-2009
Distance to target path in 2009: +5 492 deaths
Average annual growth rate: -5.4 %
Required annual rate of change: -7.5 %



Source: European Commission (CARE database), Eurostat (online data code: tsdtr420)

([12]) Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., and McKee, M., 'The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis', *The Lancet*, Vol. 374, pp. 315-323, 2009.

Figure 7.16: People killed in road accidents, by country
(% change from 2001 to 2009)



Change over period 2001-2009:
Highest reduction: Latvia: -54.5 %
Lowest reduction: Malta: +31.3 %
EU-27 average: -36.5 %

Source: EU Commission (CARE database), Eurostat (online data code: tsdtr420)

Indicator relevance

Despite the halving of fatalities in road traffic accidents that took place in the EU between 1991 and 2009, road safety is still an issue of major concern with some 34 820 fatalities in the EU during 2009. Many of these fatalities could be avoided. For this reason, the Commission proposed in its 2001 White Paper, the target of reducing the number of victims to half of 2001 levels by 2010. This general aim was reaffirmed in the European Road Safety Action Programme ([13]), and its mid-term review ([14]), as well as in the Sustainable Development Strategy and the European Road Safety Charter. Although the original target to reduce road accident deaths was set for an EU of 15 Member States, the target was reset to not exceed 27 000 deaths in EU-27 by 2010.

A new target for the next 10 years was set in 2010 ([15]). The goal is not yet quantified but aims to halve the overall number of road deaths in the European Union in 2010 by 2020. The further aim is to move close to zero fatalities in road transport by 2050 ([16]).

Definition

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

([13]) 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.
([14]) Commission communication, *European road safety action programme: Mid-term review*, COM(2006) 74.
([15]) Commission communication, *Towards a road safety area: Policy orientations on road safety 2011-2020*, COM(2010) 389.
([16]) Commission White Paper, *Roadmap to a Single European Transport Area: Towards a competitive and resource efficient transport system*, COM(2011) 144.

Average CO_2 emissions per km from new passenger cars

Between 2007 and 2009 average carbon dioxide (CO_2) emissions from new passenger cars fell at a rate that is more than sufficient to reach the 2015 target. In 2009, a new registered passenger car emitted on average 145.7 grams of CO_2 per km, which is well below the path towards the new target of 130 grams set for 2015

Commentary

Current progress in reducing CO_2 emissions of new passenger cars seems more than sufficient to meet the new 2015 target

In the EU-15 the average CO_2 emissions of new passenger cars per km decreased by 3.0 grams per year between 2000 and 2009, reaching 145.2 grams in 2009. Data for the EU-27 only cover the period from 2007 to 2009, but are similar to those for the EU-15, reaching 145.7 grams in 2009.

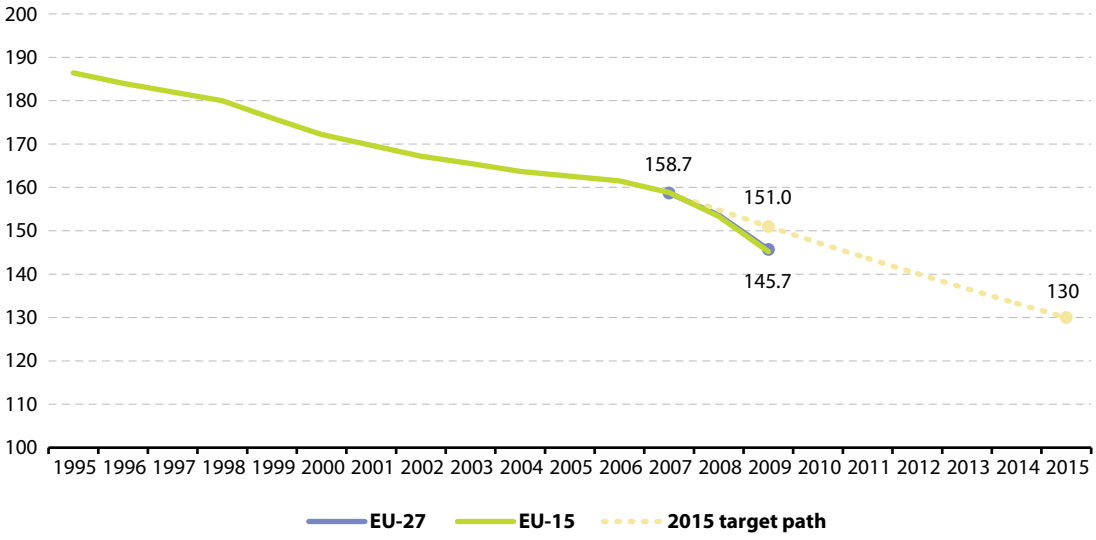
The current progress rate is sufficient for reaching the recently set target of 130 gram by 2015. While the average CO_2 emissions were reduced by 5.5 g/km from 2007 to 2008, the decrease even augmented to 8.1 g/km a year later. Values for 2009 are now ahead of the target path.

A substantial shift towards diesel, which produces less CO_2 per km for the same engine power, was a main driving power for the reduction of average GHG emissions from new passenger cars in the first years of the century. Furthermore, improved engine efficiency, e.g. fuel-saving technologies, due to efforts of car makers accounted for the most recent reduction. On the other hand, these reductions could not compensate for the increase of total emissions from road transport due to increased traffic.

With demand-oriented incentives Member States can additionally speed up the reduction of average CO_2 emissions of new cars. Such incentives have already been implemented in some countries and include scrappage incentives, extra taxes on cars with high CO_2 emissions or purchase grants for low-emission vehicles such as hybrids.

Figure 7.17: Average carbon dioxide (CO_2) emissions per km from new passenger cars (grams of CO_2 per kilometre)

Period evaluated: 2007-2009
Distance to target path in 2009: -5.3 g/km
Average annual rate of change: -4.2 %
Required annual rate of change: -2.5 %



Source: Eurostat (online data code: tsdtr450)

Indicator relevance

With more than 10 % of the overall EU emissions of CO_2, usage of passenger cars has significant impacts on climate change. Reducing the average CO_2 emissions per kilometre of newly registered cars has an important impact on overall emissions, as they accounted for about 7 % of the total car fleet.

The EU Sustainable Development Strategy states that 'in line with the EU strategy on CO_2 emissions from light duty vehicles, the average new car fleet should achieve CO_2 emissions of 140 g/km (2008/09) and 120 g/km (2012)'. In 2007 it became apparent that the voluntary target set for 2008/09 could not be met, and a revised strategy was adopted indicating the measures and actions required to meet the 2012 target ([17]). This included mandatory measures such as legislation setting future targets for CO_2 emissions from cars and vans. A regulation on CO_2 emissions standard for cars entered into force in 2009 ([18]) and sets a target of 130 g/km to be reached by improvements in vehicle motor technology by 2015, with phase-in starting in 2012. A long-term target of 95 g/km has also been set for 2020.

The revised 2007 strategy foresees further 10 g/km reduction to be obtained by using other mandatory technical improvements. Some of these measures have been adopted ([19]), while others are still under preparation. Among those measures, a regulation setting CO_2 emission standards for light commercial vehicle is close to adoption by the European Parliament and Council. Its full implementation will take place in 2016.

Definition

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

([17]) Commission communication, *Results of the review of the Community strategy to reduce CO_2 emissions from passenger cars and light-commercial vehicles*, COM(2007) 19.
([18]) Regulation (EC) No 443/2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles.
([19]) Commission report, *Progress report on implementation of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles*, COM(2010) 656.

Emissions of nitrogen oxides (NO_x) from transport

From 2000 to 2008 emissions of nitrogen oxides (NO_x) from transport in the EU continued to decrease at an even faster rate than during the previous decade. Stringent emission and fuel standards have played their role

Commentary

NO_x emissions from transport have been decreasing faster after 2000 than in the decade before

Most of the reduction is due to improvements in road transport

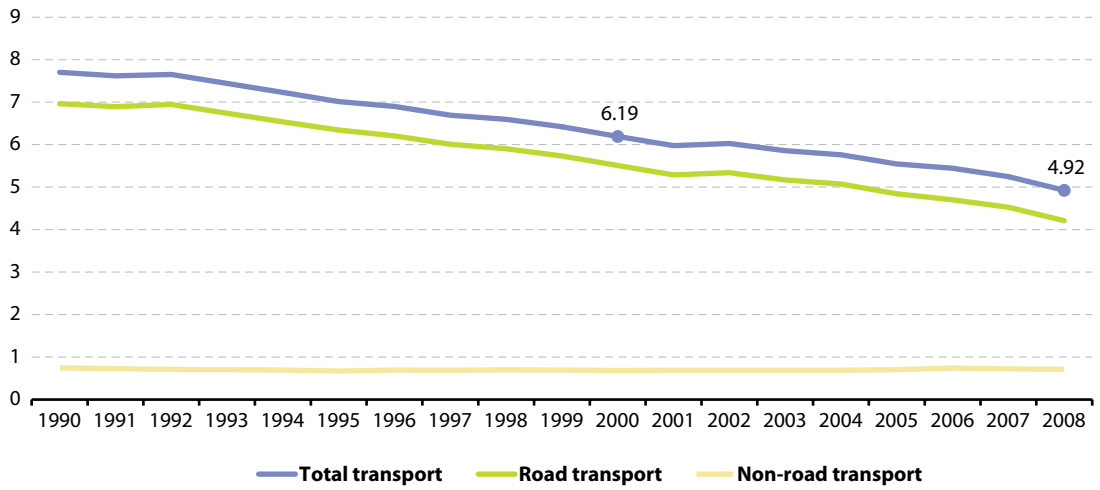
Nitrogen oxides (NO_x) emissions from transport have steadily been decreasing since at least 1990. The decrease has been driven by the emission standards for new cars and lorries, and by improvements of fuel quality.

Total NO_x emissions from transport in the EU fell by 2.8 % per year between 2000 and 2008. This compares favourably with the slightly lower rate of reduction of 2.2 % per year in the previous decade. Since 1990, total EU NO_x emissions from transport have been reduced by more than 36 %, and stood at 4.9 million tonnes in 2008 compared with 7.7 million tonnes in 1990. Emissions from road transport fell from 7.0 million tonnes in 1990 to 4.2 million tonnes in 2008. This represents an annual average decrease of 3.3 % since 2000. On the other hand, emissions from non-road transport (including international aviation and inland waterways and national navigation) remained almost constant.

Despite this considerable reduction in NO_x emissions from transport and other sources, there are still air quality problems affecting health in urban populations as well as vegetation in rural areas. For example, the overall exposure to ozone, for which NO_x is an important precursor gas, increased in the EU between 2000 and 2008 (see chapter on public health). Furthermore, only 16 Member States are expected to achieve the emission limits of NO_x indicated in the national emission ceiling Directive ([20]).

Figure 7.18: Emissions of nitrogen oxides (NO_x) from transport, EU-27 (million tonnes)

Period evaluated: 2000-2008
Average annual rate of change: -2.8 %
Relative change: -20.5 %
Absolute change: -1.27 million tonnes



NB: Non-road transport data include civil and international aviation, international inland waterways and national navigation.

Source: European Environment Agency.

Indicator relevance

NO_x is directly emitted by transport vehicles and is an important precursor gas for ozone, which is formed when sufficient concentrations of precursor gases like NO_x are released in the presence of sunlight. Ozone is a highly reactive gas that causes or provokes respiratory problems in man and

([20]) Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants.

animals. It is also toxic to plants and can lead to leaf damage and defoliation. Further precursor gases for ozone are volatile organic compounds, also emitted from vehicles (as well as other sources such as plants). NO_x can also directly affect health. In addition, it is involved in particulate formation and acidification, causing damage to soil and buildings.

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

Definition

This indicator is defined as total emissions of NO_x measured in tonnes. Under road transport the following categories are subsumed: passenger cars, light and heavy duty vehicles, mopeds and motorcycles. Non-road transport includes civil and international aviation, international inland waterways and national navigation.

Emissions of particulate matter from transport

Between 2000 and 2008 emissions of particulate matter from transport in the EU fell to about 0.3 million tonnes for both PM10 and PM2.5. This reduction is due to the reduced particulate matter emissions from road transport

Commentary

A steady decrease in PM10 and PM2.5 emissions could be observed since 2000

Emissions of fine particulate matter (PM2.5) from all transport modes in the EU decreased by 2.8 % per year between 2000 and 2008, a rate which is substantially higher than the decline of 1.4 % per year on average over the previous decade. Road emissions decreased at an even higher annual rate of 3.6 %, compared with 1.6 % per year between 1990 and 2000. In contrast, non-road transport modes increased considerably by 2.5 % per year, although at a far lower level of around 50 000 tonnes.

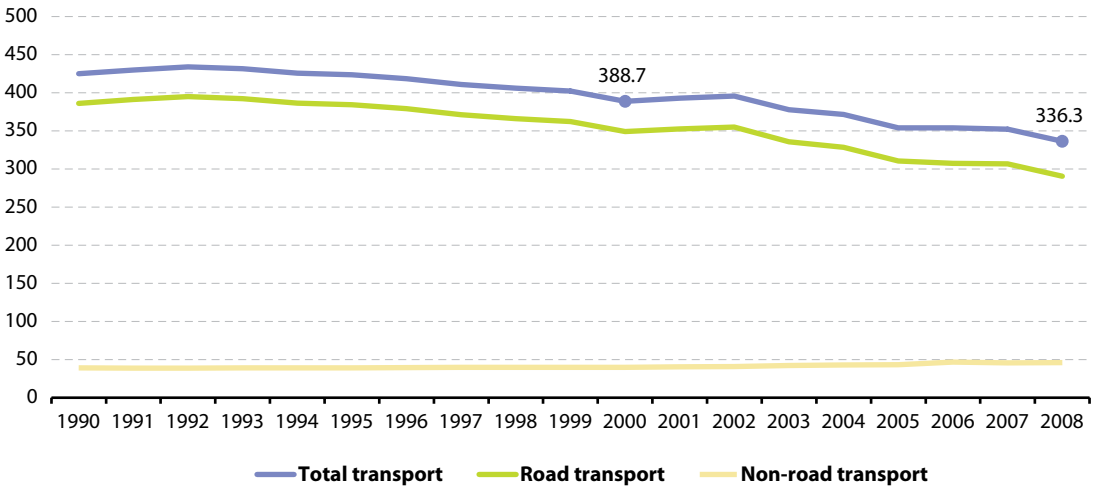
The same holds for particulate matter (PM10) emissions which have decreased by 1.8 % per year since 2000. Total PM10 emission in 2008 stood at 0.3 million tonnes in the EU, representing a reduction of more than 20 % compared to the value in 1990.

The decrease in 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 2009, the Council and the European Parliament adopted a new regulation to tighten 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 ([21]). 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.

Figure 7.19: Emissions of PM10 from transport, EU-27
(1 000 tonnes)

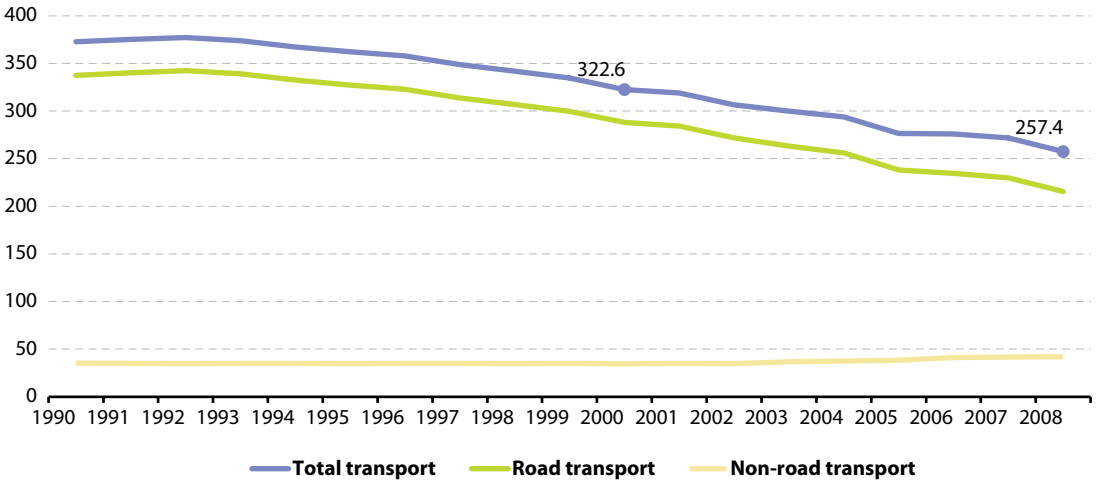
Period evaluated: 2000-2008
Average annual rate of change: -1.8 %
Relative change: -13.5 %
Absolute change: -52 400 tonnes



Source: European Environment Agency.

([21]) Regulation (EC) No 595/2009 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.

Figure 7.20: Emissions of PM2.5 from transport, EU-27
(1 000 tonnes)



Period evaluated:
2000-2008
Average annual rate of change:
-2.8 %
Relative change:
-20.2 %
Absolute change:
-65 200 tonnes

Source: European Environment Agency.

Indicator relevance

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 is an operational objective of the Sustainable Development Strategy.

Definition

This indicator is defined as the emissions of particulate matter PM10 (small particles with an aerodynamic diameter less than or equal to a nominal 10 micrometer) and PM2.5 (particulate matter with an average aerodynamic diameter of up to 2.5 μm, referred to as the fine particle fraction which per definition includes the ultrafine particles) from transport, measured in tonnes.

Under road transport the following categories are subsumed: passenger cars, light and heavy duty vehicles, mopeds and motorcycles, automobile tyre and brake wear, and automobile road abrasion. Non-road transport includes civil and international aviation, international inland waterways and national navigation.

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 states 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. Almost in all countries vehicles with very low capacity are not covered.

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. Due to difficulties in data collection passenger-kilometres estimations without interruptions for all EU-27 countries are only available since 2005. To complete the picture, data of vehicle-kilometres could additionally be analysed.

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 cannot have seaports and some countries do not have river, canal or rail networks;

- Data are completely missing for the Netherlands.
- Parts of data, i.e. incomplete time-series or coverage of only some modes, are missing for Bulgaria and Greece.

More information on this indicator can be found at http://www.internationaltransportforum.org/statistics/investment/data.html.

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 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. Rail transport emissions from electricity production are not included.

Average CO_2 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.

Natural resources

8

'To improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services' (overall objective of the EU Sustainable Development Strategy for the key challenge 'conservation and management of natural resources')

Overview of main changes

Changes in the natural resources theme since 2000 show both favourable and unfavourable trends. On the one hand, there has been continued progress in the designation of protected areas and in water quality, and the harvesting of wood from forests remains sustainable. The abundance and diversity of common birds have stabilised, albeit in a substantially poorer state than they were in 1990 and previous decades. On the other hand, marine fish stocks remain under threat and built-up land continues to increase at the expense of areas of semi-natural land.

Table 8.1: Evaluation of changes in the natural resources theme *(EU-27, from 2000)* ([1])

Level 1	Level 2	Level 3
	Biodiversity	
	Protected areas (**)	
Abundance of common birds (*)	**Fresh water resources**	
	: Water abstraction	Water quality in rivers (***)
	Marine ecosystems	
Conservation of fish stocks		: Fishing capacity
	Land use	
	Increase in built-up land (****)	Forest increment and fellings

(*) EU aggregate based on 19 Member States.
(**) EU-25, from 2006.
(***) Aggregate based on 19 European countries.
(****) EU aggregate based on 23 Member States.

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicators

Common bird populations are recovering, but at levels below previous decades

The EU index for all common birds has started to stabilise since 2000 following the sharp declines over previous decades. Recovery has been particularly evident in habitat generalists and forest species. On the other hand common farmland bird populations are still on the decline.

Fish catches remain outside safe biological limits

Total fish catches taken from stocks outside safe biological limits reached close to 24 % in 2009. Currently, fish catches of almost all categories exceed by far a sustainable degree of exploitation.

Biodiversity

Protected areas are approaching sufficiency

In 2010 areas designated for nature conservation in the EU-25 reached 89 % of that considered necessary to provide sufficient habitats to safeguard biodiversity. The differences in the level of implementation between older Member States and those that have most recently joined the EU is narrowing, and in 2010 the median value of all 27 Member States was 98 %. Although implementation is nearly completed in terms of area covered, progress is still needed in terms of the management of designated sites and connectivity between sites.

Freshwater resources

Freshwater quality is improving in rivers and abstraction rates have stabilised

In most of the countries for which data are available, surface water abstraction has stabilised. Groundwater extraction rates are still at high or unsustainable levels in some countries. The great variation of rates between countries can be related to geo-climatic characteristics as well as the relative importance of specific economic sectors, such as tourism and agriculture in some European regions.

From 2000 to 2008 the concentration of biodegradable organic matter and other nutrient pollutants in rivers has decreased across Europe as a whole ([2]), indicating a clear improvement of freshwater quality. The Urban Wastewater and Water Framework Directives are amongst the main drivers of this favourable trend.

Marine ecosystems

Despite reduction in fishing fleet, fishing capacity has not diminished

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

Land use

Areas of natural land continue to be built on

Built-up land continued to encroach on farmland and semi-natural land between 2000 and 2006. The highest rate of growth was for mine, dump and construction sites, followed by transport networks. The fragmentation of ecosystems associated with such extensive linear structures is a major pressure on biodiversity.

Forest fellings remain sustainable

Between 2000 and 2010 fellings increased slightly while there was a substantial fall of increment. This resulted in a considerable increase in the forest utilisation rate (the ratio between fellings and increment). Nevertheless, the harvesting of wood remains sustainable.

([2]) The indicator is pan-European, including both Member and non-member States.

Natural resources and sustainable development

Natural resources are of vital importance for human well-being

In sustainability science, natural resources are often associated with natural capital. However, the concept of natural capital goes beyond the mere utilisation of nature as a resource (providing wood, fibre, minerals, genes, knowledge etc.). It also covers all living and non-living components of ecosystems as well as their processes and dynamics. Biodiversity, the variety in genes, species, and ecosystems, plays a crucial role in improving the resilience of ecosystems to a changing external environment including climate change.

Ecosystem degradation can reach points of no return

Natural systems can only tolerate disruption up to a certain point (often referred to as a threshold, a tipping point or a point of no return). Fish stocks falling below the critical number of individuals needed to sustain the stock, or forest degradation leading to substantial shifts in water and nutrient cycles, are examples of such tipping points for specific ecosystems. The resilience and dynamism of ecosystems can vary greatly across biomes but in some cases crossing natural thresholds may cause irreversible damage on a human time-scale. This can lead to new (often degraded) systems with a lower performance in the delivery of ecosystem services (e.g. carbon sequestration, water purification).

Well-functioning ecosystems are a pre-requisite of human welfare

With humanity strongly dependant on well-functioning ecosystems, the over-exploitation of natural capital inevitably puts livelihoods at risk. Diminishing resources, in quantity and quality, can result in severe losses to human welfare as has already been experienced in many parts of the world, especially in rural areas where desertification, exacerbated by climate change, and land degradation has led to abandonment of land that was used for agriculture. On the other hand, the use and consumption of natural resources is also the backbone of human welfare and economic growth.

Protection strategies have to differentiate between renewable and non-renewable resources

The protection and wise use of natural resources is therefore an integral part of sustainable development. With this in mind, strategies generally differentiate between renewable and non-renewable resources. In principle, renewable resources must not be used beyond their recovery rate, while benefits from using non-renewable resources such as oil should be invested in seeking possibilities for their replacement.

The conservation and management of natural resources are a priority for sustainable development

The EU Sustainable Development Strategy (SDS) adopted in Gothenburg in 2001 referred to breaking the link between economic growth and environmental degradation by avoiding overexploitation of natural resources and the generation of waste, and by improving the efficiency of natural resource use. The renewed EU SDS adopted in 2006 identified the need to improve the management of natural resources and to avoid overexploitation, in particular by recognising the value of ecosystem services. Finally, the Sixth Environment Action Programme ([3]), which established the EU framework for environment policy for the period 2002 to 2012, lists natural resources as one of four priority issues.

Thresholds for environmental sustainability are needed to provide early warnings

Identifying and monitoring environmental tipping points is also of high relevance to sustainable development. Against the backdrop of discussions on the adequacy of GDP as an indicator of societal wealth and progress ([4]), the Commission emphasises the identification of physical environmental threshold values as a means to better respect the limits of nature's ability to cope with growing consumption of natural resources and to absorb pollutants.

Global biodiversity continues to decline at alarming rates

Recent assessments of the status and prospects for ecosystems and biodiversity, however, present a gloomy light view of current developments (e.g. CBD 2010, EEA 2010 – see further reading). Indications suggest that some of the planet's most critical natural boundaries (such as for climate and biodiversity) have already been crossed ([5]). For others such as global freshwater consumption and land use change, humanity is edging closer to the limits. In the European context, increases have been seen in indicators for resource consumption by humans, the deposition rate of nitrogen, the number of alien species in Europe, the over-exploitation of fish stocks, and the impact of climate change on biodiversity, for example on European bird populations ([6]).

Healthy ecosystems are needed to adequately respond to climate change

The economic costs related to natural resources and to their overexploitation are expected to continue to accelerate as a consequence of climate change, particularly through the increasing occurrence of extreme weather events (storms, droughts, heavy rainfall). As different types of ecosystem provide

([3]) Decision No 1600/2002/EC laying down the Sixth Community Environment Action Programme.
([4]) Commission communication, *GDP and beyond: Measuring progress in a changing world*, COM(2009) 433.
([5]) Rockström, J., et al., 'Planetary boundaries:exploring the safe operating space for humanity', *Ecology and Society*, Vol. 14(2), 32, 2009.
([6]) Butchart, S.H.M., et al., 'Global Biodiversity: Indicators of recent declines', *Science* Vol. 328. pp 1164-1168.

services such as carbon absorption or water retention and flood control, the sustainable use of natural resources and ecosystem protection and restoration, also play important roles in climate adaptation and mitigation strategies. Climate change also exacerbates the pressure on already damaged or depleted systems and resources.

After failing the target for 2010 the EU resets its target of halting the loss of biodiversity to 2020

In 2009 the EU acknowledged that the target of halting the loss of biodiversity by 2010 set by EU Heads of State in 2001 would not be reached. This European target reflected the EU's implementation of international commitments to significantly reduce the loss of biodiversity by 2010 in the framework of the UN Convention on Biological Diversity (CBD). As this pledge was fulfilled, neither at EU nor at international level, the EU is formulating new targets for 2020 and 2050.

Box 8.1: 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, 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. Overall objective: To promote good public health on equal conditions and improve protection against health threats.
- 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.

Further reading on natural resources

Commission communication, *Our life insurance, our natural capital: an EU biodiversity strategy to 2020,* COM(2011) 244

European Commission, *Facts and figures on the Common Fisheries Policy – 2010 Edition,* Luxembourg, Office for Official Publications of the European Union, 2010

European Environment Agency, *Assessing biodiversity in Europe - the 2010 report,* EEA report No 5/2010, Luxembourg, Office for Official Publications of the European Union, 2010

European Environment Agency, *EU 2010 Biodiversity Baseline,* EEA Technical report No 12/2010, Luxembourg, Office for Official Publications of the European Union, 2010

European Environment Agency, *The European Environment – state and outlook 2010,* (http://www.eea.europa.eu/soer)

Eurostat, *Forestry in the EU and the world: A statistical portrait – 2011 edition,* Luxembourg, Office for Official Publications of the European Union, 2011

Eurostat news release 145/2010, *Land Use/Cover Area frame Survey: Results on EU land cover and use published for the first time,* 4 October 2010

The Economics of Ecosystems and Biodiversity (TEEB) reports (http://www.teebweb.org/InformationMaterial/TEEBReports/tabid/1278/Default.aspx)

Abundance of common birds

The EU index for all common birds has stabilised between 2000 and 2008, after experiencing sharp decreases between 1990 and 2000

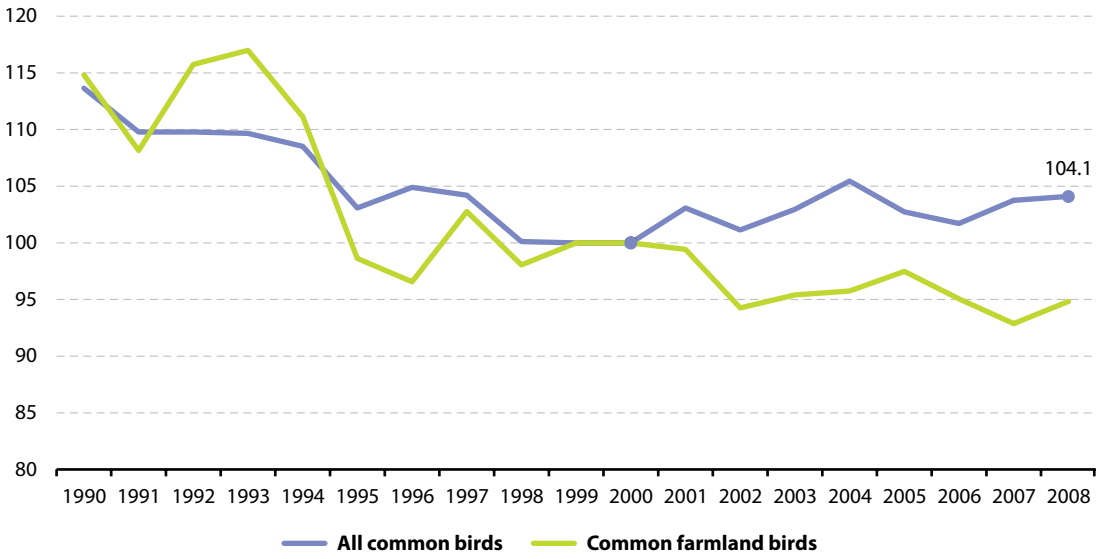
Commentary

A stabilisation in common bird populations has begun

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.

Between 1990 and 2000 the index of all common birds for 19 Member States showed a steep decline of 1.3 % per year on average. Since 2000 there have been signs of recovery. Observed common bird population diversity and abundance during that period has been growing with an average of 0.5 % yearly. Among the species that have shown some increase, habitat generalists are well represented. Species that have increasing trends also include some specialist forest species (such as the Blackcap), the Eurasian Collared Dove, the Common Buzzard and the Common Raven; both Buzzard and Raven are recovering from past declines ([7]).

Figure 8.1: Common bird index, EU
(index 2000 = 100)



Period evaluated: 2000-2008 (all common birds)

Average annual rates of change:

All common birds: +0.5 %

Common farmland birds: -0.7 %

NB: The EU aggregate is an estimate 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.

Source: Eurostat (online data code: tsdnr100)

But abundance of common farmland birds is still declining

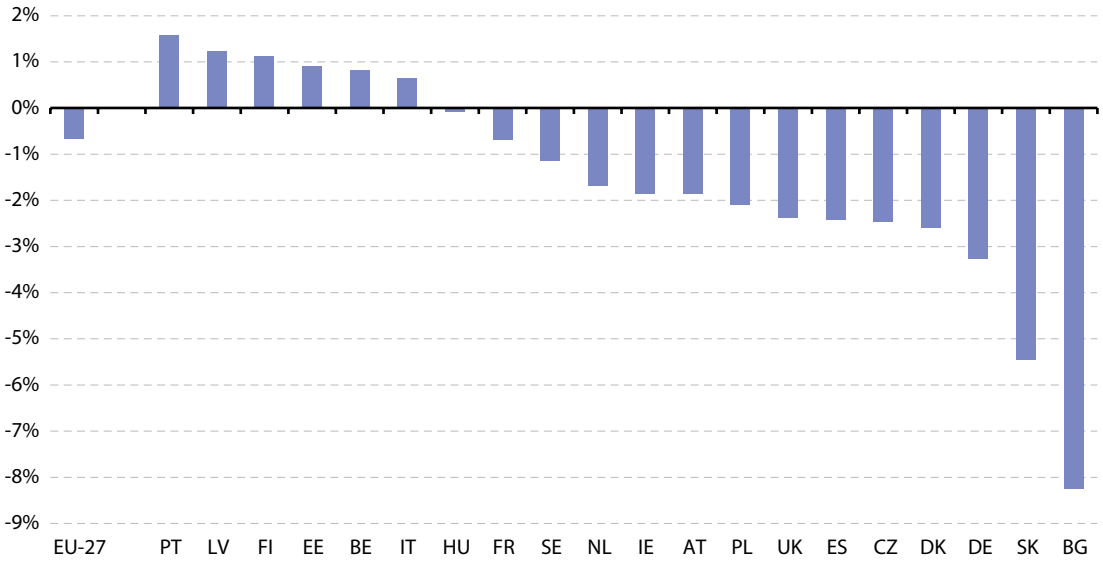
In contrast, the population of farmland birds, which is a subcategory of common birds, has continued to decline, albeit at a lower rate in recent years. Between 1990 and 2000, the farmland bird index fell by 1.4 % per year on average. Since then the annual rate of decline has fallen to about 0.7 %. The populations of farmland birds in the Member States that were part of the 2004 and 2007 EU enlargements which were previously performing better are now, increasingly, catching up with the declining trends of the rest of the EU. Intensification of agricultural practices and the ensuing deterioration and conversion of suitable habitats appear to be among the main drivers behind these trends ([8]).

([7]) Pan-European Common Bird Monitoring Scheme, *The state of Europe's common birds 2007*, CSO/RSPB, Prague, 2007.
([8]) BirdLife International, *Europe-wide monitoring schemes highlight declines in widespread farmland birds*, 2011.

A decline in the common farmland bird index took place in many of the 20 Member States for which information is available. Bulgaria, Slovakia and Germany show the highest annual average rates of decline, whilst Portugal, Latvia and Finland show the most positive trends.

Figure 8.2: Change in the index of common farmland birds, by country
(average annual rate of changes 2000-2007, %)

Change over period 2000-2007:
Average annual rates of change:
EU-27 average: -0.7 %
Strongest increase: Portugal: +1.6 % (since 2004)
Strongest decrease: Bulgaria: -8.2 % (since 2005)



NB: Change over 2000-2005 for BE, 2000-2006 for EE, 2004-2007 for PT, 2005-2007 for BG and SK.

Source: Eurostat (online data code: tsdnr100)

Indicator relevance

Birds are considered to be good proxies for the overall status of biodiversity, for the integrity of ecosystems and for the heterogeneity of specific habitat types. They reflect environmental changes in ecosystems rather rapidly since they tend to be at, or close to, the top of the food chain. The indicator provides a measure of the state of a wide range of common species.

The 2010 assessment of the implementation of the Biodiversity Action Plan ([9]) acknowledged that the EU SDS target of halting biodiversity loss in the EU by 2010 was not achieved. The EU biodiversity strategy to 2020 ([10]) resets the target of halting biodiversity loss in the EU to 2020 and attempts to respond to the main obstacles and threats that prevented the achievement of the 2010 target. The proposals to reform the Common Agricultural Policy ([11]) also promote the active management of natural resources by farming as an important tool to combat biodiversity loss.

Definition

This indicator is an aggregated index integrating the population abundance and the diversity of a selection of bird species associated with specific habitats. In all, the index encompasses 136 bird species, which are common in European landscapes. An increase in the indicator means that there are more species whose populations have increased than there are species with decreasing populations.

([9]) Commission report, *The 2010 assessment of implementing the EU Biodiversity Action Plan*, COM(2010) 548.
([10]) Commission communication, *Our life insurance, our natural capital: an EU biodiversity strategy to 2020*, COM(2011) 244.
([11]) Commission communication, *The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future*, COM(2010) 672.

Conservation of fish stocks

Between 2000 and 2009 the proportion of total fish catches taken from North East Atlantic stocks outside safe biological limits declined moderately. However, in 2009 the share of fish catches outside safe biological limits was still close to 24 %

Commentary

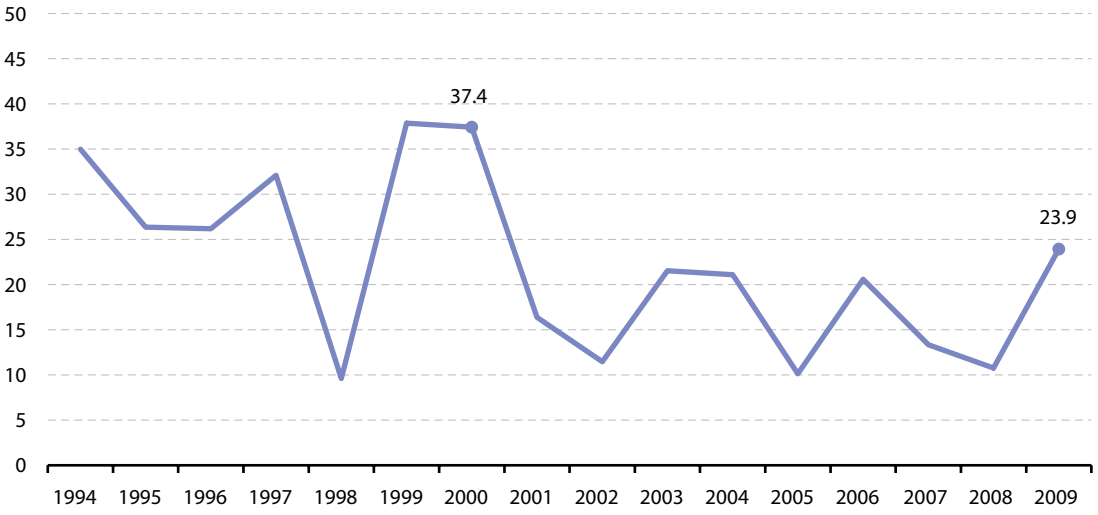
Fish stocks continue to be threatened by overfishing

Despite temporary improvements in 2002 and 2005, 23.9 % of total fish catches in 2009 were from stocks outside safe biological limits, and catches of all categories of non-industrial fish considerably exceeded sustainable levels of exploitation.

Total catches taken from stocks outside safe biological limits declined to close to 10 % in 2005. However, due to a sharp increase in unsustainable catches, especially of pelagic fish (which live in the open sea), and the constant high value for demersal fish (which live on or close to the sea bed), total fish catches from stocks outside safe biological limits again exceeded the 20 % mark in 2009. Total fish stocks remain threatened by overfishing in the North East Atlantic.

Figure 8.3: Fish catches taken from North East Atlantic stocks outside safe biological limits, total catches

(%)



Period evaluated: 2000-2009)

Average annual rate of change: -4.8 %

NB: EU-managed waters of North-East Atlantic only (North Sea, Baltic Sea, Bay of Biscay and the Iberian Peninsula), and excluding the Mediterranean Sea and the Black Sea.

Source: European Commission services, ICES, Eurostat (online data code: tsdnr110)

Half of the catches of demersal fish in 2009 were unsustainable

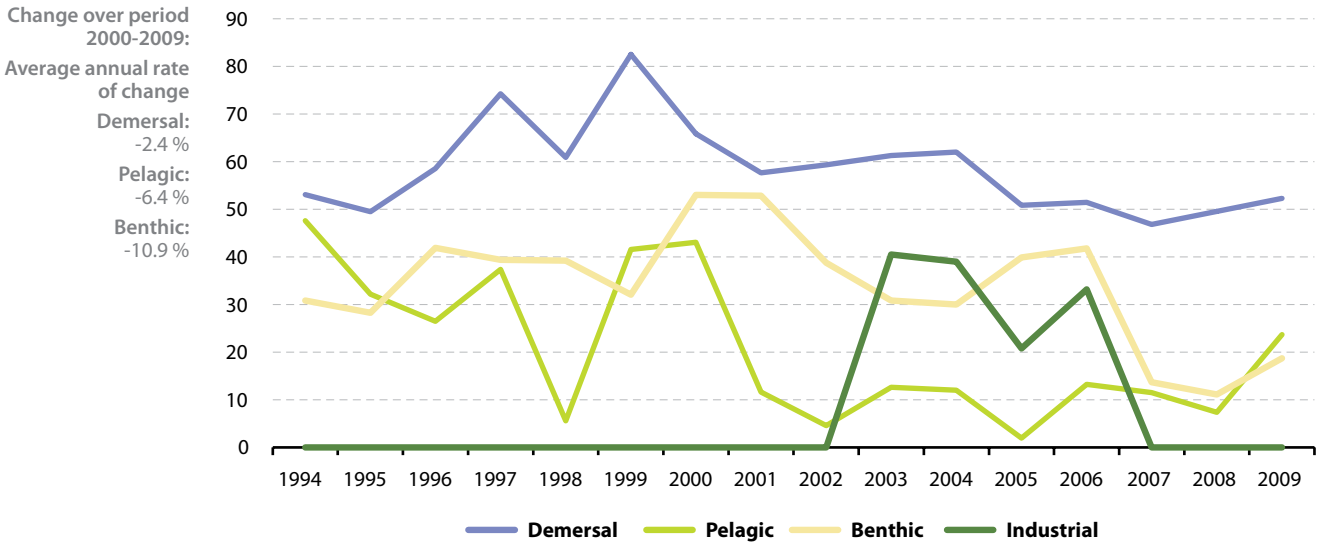
Although slowly declining, unsustainable catches of demersal fish (which live on or close to the sea bed) show the highest rate among total fish catches with 62 % in 2004 and over 50 % in 2009. Fishing of pelagic (open sea species) stocks above sustainable levels decreased considerably between 2000 and 2005 but has since risen again to 23.7 %. Overfishing of benthic stocks has been on track towards safe levels since 2000, almost reaching 10 % in 2008. Industrial fish stocks have reached sustainable levels of fishing since 2007.

Fishing quotas do not always reflect scientifically defined sustainable amounts of catches

It is difficult to establish clear links between these figures and yearly fishing quotas, or Total Allowable Catch (TAC) per species, area and time, because the stocks of specific species are not only influenced by catches of that species, but also of species on which they depend in the food web. In the EU, the TAC of many common fish species is agreed by the Council of Ministers. Fixed shares of TAC are distributed among the Member States based on historical shares of catches, which is in turn directly related to fishing capacity and fleet size (see indicator on fishing capacity below). It can nevertheless be

noted that despite the fact that the decision making process concerning TACs foresees the inclusion of scientific advice, a 2008 Commission Communication observed that the TACs decided by the Council have on average been 48 % higher than the scientifically defined sustainable levels (based on a precautionary approach) ([12]).

Figure 8.4: Fish catches taken from stocks outside safe biological limits, by category (%)



NB: EU-managed waters of North-East Atlantic only (North Sea, Baltic Sea, Bay of Biscay and the Iberian Peninsula), and excluding the Mediterranean Sea and the Black Sea.

Source: European Commission services, ICES, Eurostat (online data code: tsdnr110)

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 (CFP) ([13]), 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. It also identifies structural problems of the CFP that the reform should aim to overcome, this includes fleet overcapacity, vague policy objectives encouraging decision making based on short term economic interests and lack of compliance and responsibility on the part of the fishing industry. In the process of reform of the CFP a public consultation has been held and the impacts of different policy scenarios for reform are being assessed. A reviewed CFP should enter into force by 2013.

The operational objectives of the EU Sustainable Development Strategy include improving management and avoiding overexploitation of renewable natural resources, including fish.

The economic relevance of a more sustainable management of fish stocks becomes increasingly apparent when looking at estimates of the difference between potential and current net economic benefits from marine fisheries, in the context of overexploitation of the resource due to poorly regulated access ([14]). On a global scale the World Bank has assessed this difference to be around EUR 40 billion annually ([15]), based on which fisheries could currently qualify as an 'underperforming natural asset' ([16]).

([12]) Commission communication, *Fishing Opportunities for 2009: Policy Statement from the European Commission*, COM(2008) 331.
([13]) Commission Green Paper - Reform of the Common Fisheries Policy, COM(2009)163.
([14]) World Bank and Food and Agriculture Organization, *The sunken billions: The economic justification for fisheries reform*, The World Bank, Washington DC, 2009.
([15]) European Environment Agency, *EU 2010 Biodiversity Baseline*, EEA Technical report No 12/2010, Luxembourg, Office for Official Publications of the European Union, 2010.
([16]) The Economics of Ecosystems and Biodiversity (TEEB), *The economics of ecosystems and biodiversity for national and international policy makers – Summary: Responding to the Value of Nature*, TEEB, 2009.

Marine reserves or 'no-take zones' have been recognised as an effective tool for the conservation and recovering of fish stocks. By nurturing stocks within their boundaries it is expected that these areas also positively affect commercial stocks through a spill-over effect ([17]). In this regard, the implementation of the 2008 Marine Strategy Framework Directive, of which the main objective is to achieve 'good environmental status' in all EU marine regions by 2020, should also offer additional opportunities to addressing the current issues revolving around the management of marine biodiversity.

Definition

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 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 which are covered by a separate organisation.

([17]) World Resource Institute, *Fishing for answers. Making sense of the global fish crisis*, Washington, DC, 2004.

Protected areas

Between 2006 and 2010 the area designated for nature conservation in the EU-25 grew steadily, reaching a level of 89 % of that considered sufficient

Commentary

Seven Member States have already achieved 100 % sufficiency and ten others are over 90 % sufficient

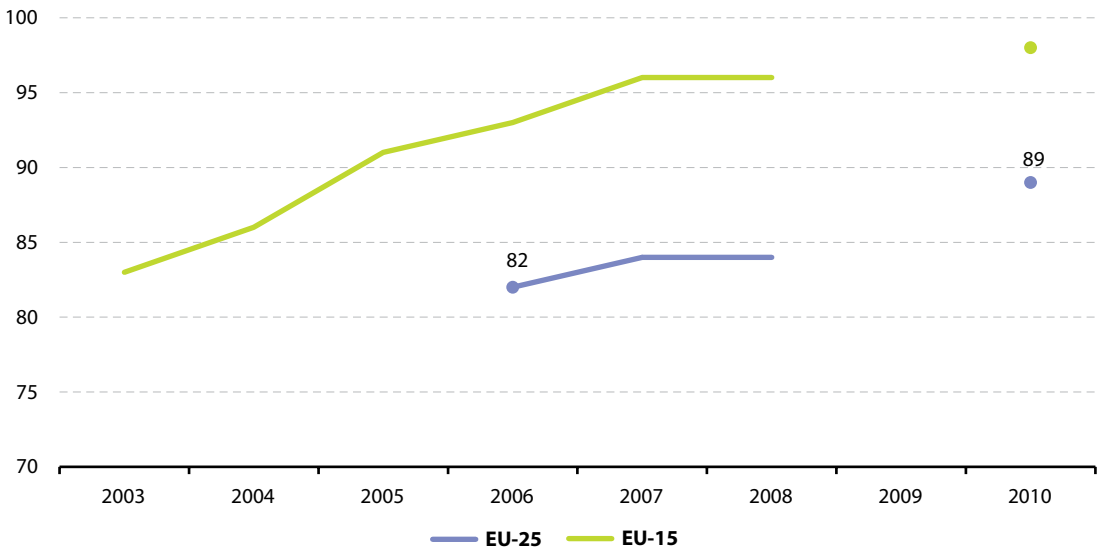
The establishment of Natura 2000 sites is an important pillar of the EU's efforts to halt the loss of biodiversity. The sufficiency of designated areas in the EU-15 rose steadily from 83 % in 2003 to 98 % in 2010. For the EU-25, the sufficiency of designated areas rose from 82 % to 89 % between 2006 and 2010.

Belgium, Denmark and the Netherlands, who had already achieved 100 % sufficiency by 2008, have been joined by Greece, Luxembourg, Sweden and the United Kingdom in 2010. A further ten Member States are over 90 % sufficient, Cyprus is the only Member State below 50 %. By far the largest increase from 2008 to 2010 has been in Poland (from 17 % to 78 %).

In interpreting the sufficiency of sites designated as an indicator of the status of protected areas in the EU, two aspects should nevertheless be kept in mind. Firstly, this indicator shows the progress towards the full designation of areas that qualify for protection under the Habitats Directive. Variations between Member States exist regarding the total area that can potentially be designated, depending on the presence of specific vulnerable habitats and species targeted by the Directives. Secondly, and more importantly, the indicator refers to the designation of areas, in terms of area covered, not yet to their actual protection, i.e. management ensuring the effective conservation of habitats and species. As revealed by the 2009 Commission report on the conservation status of habitats and species under the Habitats Directive, nearly 65 % of the protected habitats and 52 % of protected species are in an unfavourable conservation status ([18]). The assessment for species found in grasslands, agricultural and coastal areas is even more negative.

Figure 8.5: Sufficiency of sites designated under the EU Habitats directive
(%)

Period evaluated: 2006-2010 (EU-25)
Average annual rate of change: +2.1 %
Relative change: +8.5 %

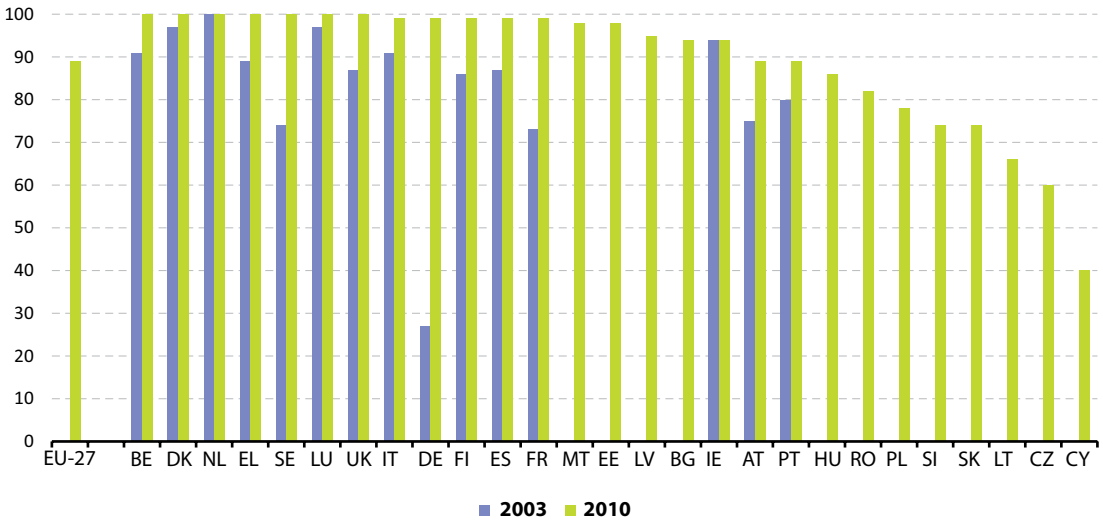


NB: EU-27 figures (2008-2010; not shown in graph) are similar to EU-25; no data collection in 2009.

Source: Eurostat (online data code: tsdnr210)

([18]) Commission report, *Composite Report on the Conservation Status of Habitat Types and Species as required under Article 17 of the Habitats Directive*, COM(2009) 358.

Figure 8.6: Sufficiency of sites designated under the EU Habitats directive, by country
(%)



Key figures in 2010:

Seven countries (BE, DK, EL, LU, NL, SE, UK) have reached 100 % sufficiency

Lowest: Cyprus with 40 % sufficiency

EU-27 average: 89 % sufficiency

Source: Eurostat (online data code: tsdnr210)

Indicator relevance

The sufficiency index, so far compiled only for the Habitats Directive, indicates the degree of implementation of the Natura 2000 network. The EU Sustainable Development Strategy calls for Member States to complete the Natura 2000 network and to pay particular attention to species, habitats protection and management. In 2011, 739 new sites proposed by Member States were formally recognised by the Commission as Sites of Community Importance and can hereby join the Natura 2000 network. Marine sites account for more than 17 500 km² of a total of almost 27 000 km² covered by these new sites. As mentioned previously (see indicator of conservation of fish stocks), marine reserves, and to some extent marine protected areas (depending on the restrictions on exploitation), can have a critical role to play in enhancing the recovery of fish stocks.

Definition

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.

Water abstraction

In nearly all Member States for which data are available, water abstraction remained at a sustainable level, and many countries appear to have stabilised abstraction pressure on water resources between 2000 and 2009

Commentary

Water abstraction levels are generally within sustainable limits

The share of total annual water abstraction from available renewable water resources, including surface and groundwater, gives an indication of the pressure on the long-term annual average of renewable water resources. The groundwater available for annual abstraction is defined as the recharge, i.e. water moving from surface to groundwater, less the long-term annual average rate of flow, i.e. water moving from ground to surface water, required to achieve ecological quality objectives for associated surface water.

The consumption of both surface and groundwater is driven by four main economic activities: cooling in electricity production; public water supply; the manufacturing industry; and 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 Member States for which data is available. In southern counties agricultural water abstraction accounts for 60 % of the total ([19]).

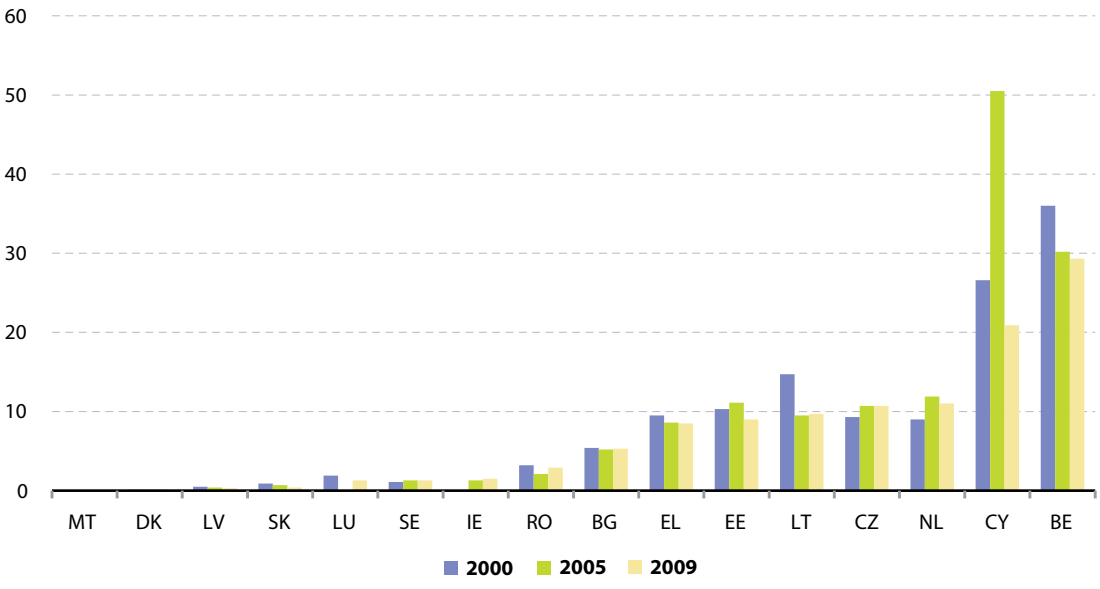
From 2000 to 2009, overall, annual surface water abstraction either remained relatively stable in most Member States for which data is available. Only Cyprus experienced a considerable increase in surface water abstraction, reaching 50.5 % of renewable resources in 2005, which, however, levelled off to about 21 % in 2009.

Figure 8.7: Surface water abstraction as a share of available resources, by country (%)

Key figures:

In 2009 most abstraction levels were below 10 %

Highest: Cyprus in 2005 with 50.5 %



NB: BE, IE, EL, LV, SK, SE data from 2007 in place of 2009, LU data from 1999 in place of 2000, NL data from 2001 and 2008 in place of 2000 and 2009.

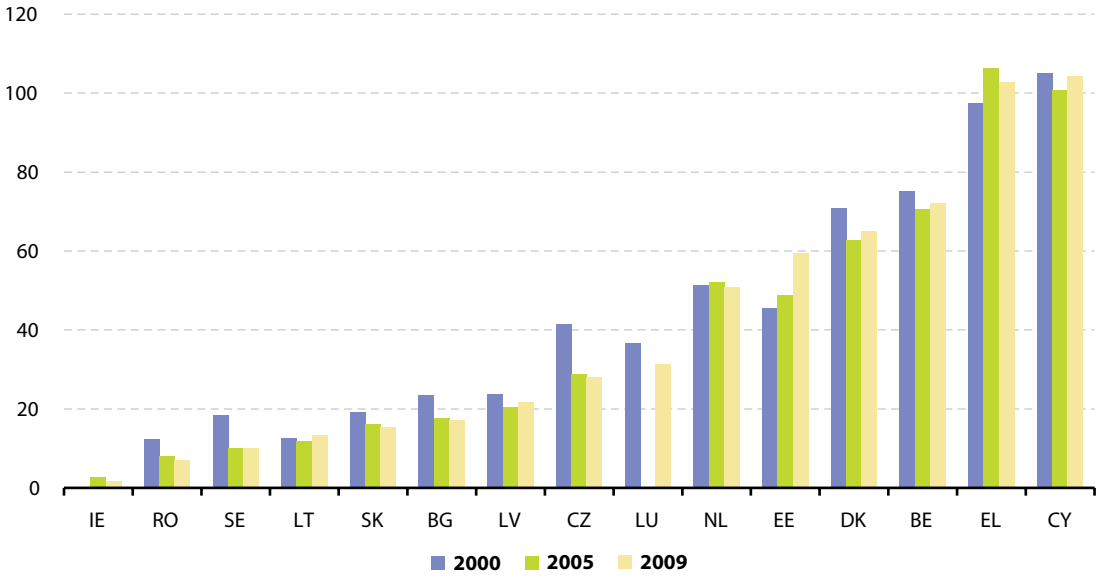
Source: Eurostat (online data code: tsdnr310)

([19]) European Environment Agency, *Water resources across Europe – confronting water scarcity and drought*, EEA Report No 2/2009, Publications Office of the European Union, Luxembourg, 2009

Groundwater abstraction remained relatively stable between 2000 and 2009 in most Member States for which data are available. Several countries still show high or, in the case of Greece and Cyprus, unsustainable groundwater abstraction levels in 2009. Groundwater abstraction in Greece peaked at around 106 % in 2005. A considerable increase, of more than 30 %, in abstraction levels can be observed in Estonia between 2000 and 2009.

Some Member States show unsustainable levels of groundwater abstraction

Figure 8.8: Groundwater abstraction as a share of available resources, by country
(%)



Key figures:

Abstraction levels of Greece and Cyprus crossed 100 % in 2009

Increase of 30 % in Estonia between 2000 and 2009

NB: BE, EL, IE, LV, LT, SK, and SE data from 2007 (instead of 2009), LU data from 1999 (instead of 2000), NL data from 2001 and 2008 (instead of 2000 and 2009)

Source: Eurostat (online data code: tsdnr310)

Indicator relevance

Availability of water for abstraction is strongly determined by geographical location. Geo-climatic 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.

Although groundwater and surface water are presented separately, there are evident hydrological interactions between these two resources. In consequence, increased or high levels of surface water abstraction hamper the recharge of groundwater resources. Abstraction varies annually due to weather and changes in industrial productivity. Small variations should not necessarily be interpreted as trends.

The indicator provides an assessment of pressures on quantities of long-term water resources. The EU 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 (WFD) ([20]), which aims to achieve coherent and sustainable water management, both in terms of quality and quantity. A review of the implementation of the WFD in the Member States since its adoption in 2000 is foreseen by the end of 2012. In 2007, the Commission additionally adopted a communication addressing the challenge of water scarcity and droughts in the EU ([21]). The strategy will have been reviewed by 2012 to also include water scarcity indicators.

([20]) Directive 2000/60/EC establishing a framework for Community action in the field of water policy.
([21]) Commission communication, *Addressing the challenge of water scarcity and droughts in the European Union*, COM(2007) 414.

Both reviews, of the WFD implementation and of the water scarcity and droughts strategy, will form the basis for an integrated EU water strategy, the Blueprint for Safeguarding European Waters, expected by the end of 2012. Discussions are also ongoing on a potential revision of the 2006 Groundwater Directive which sets rules on groundwater quality and pollution.

Definition

This indicator shows total water abstraction per year as a percentage of the long-term renewable available water resources (yearly average), separated into groundwater and surface water.

'Annual total gross abstraction from renewable *groundwater*' is presented as a percentage of Member States' long-term renewable groundwater available for abstraction (yearly average). 'Annual total gross abstraction from renewable fresh *surface water*' is presented as a percentage of Member States' long-term renewable surface water resources available for abstraction (yearly average). This latter is 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

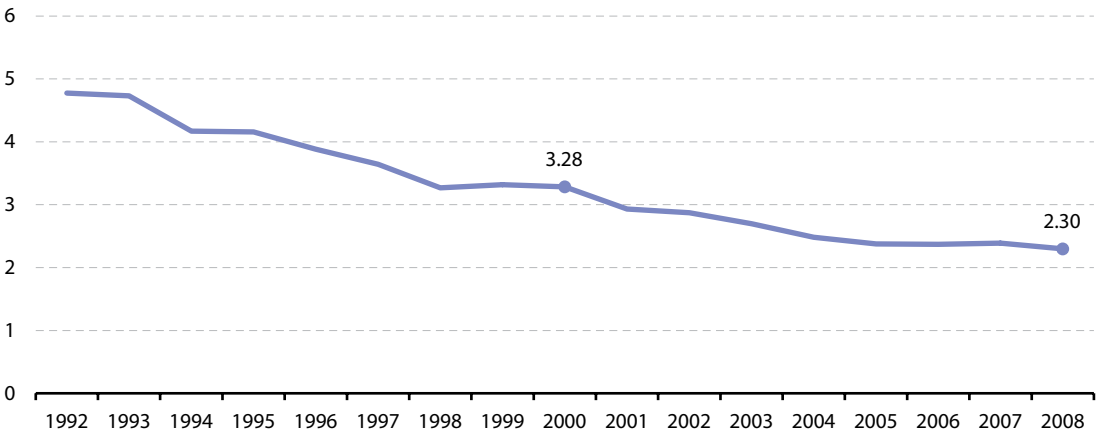
Between 2000 and 2008 the annual mean concentration of biochemical oxygen demand has decreased in European rivers, indicating a favourable increase in water quality

Commentary

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 across rivers in Europe over the entire period for which data are available. Biochemical oxygen demand in European rivers fell from a mean level of 3.3 mg/l in 2000 to 2.3 mg/l in 2008. This trend is indicative of the improvement in waste water treatment following the 1991 Urban Wastewater Directive ([22]) and possibly to decreasing nitrate emissions from agriculture.

Water quality in European rivers has improved both before and after 2000

Figure 8.9: Biochemical oxygen demand (BOD5) in European rivers
(mg O_2/l)



NB: Pan-European indicator includes EU Member and non-member States (see Methodological notes for further details).

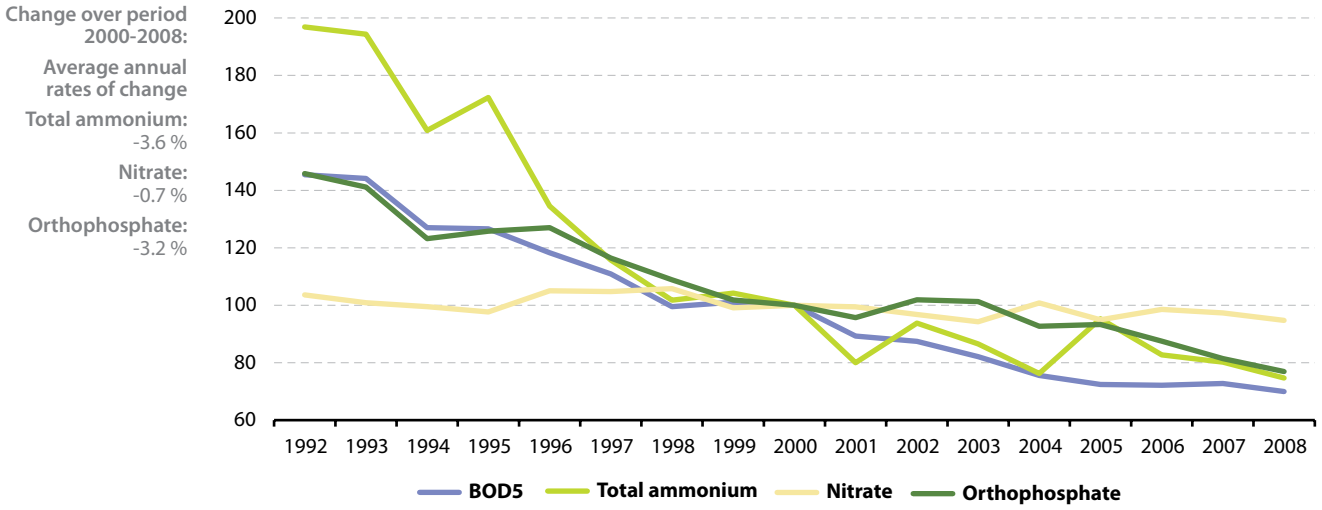
Source: European Environment Agency (tsdnr330)

The trends in BOD are mirrored by other, more specific, measurements of water quality, such as ammonium, nitrate and phosphate.

Water quality in rivers has improved

([22]) Council Directive 91/271/EEC concerning urban waste-water treatment.

Figure 8.10 Oxygen-consuming substances and nutrients in European rivers (index 2000 = 100)



NB: Pan-European indicator includes EU Member and non-member States.

Source: European Environment Agency.

Indicator relevance

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. The adoption and compliance with the Water Framework Directive has an important impact on reducing pressure from point source (from sewage treatment and industry) and diffuse pollution (e.g. from run-off from agricultural fields) of water bodies in the Member States. A review of the implementation of the WFD in the Member States since its adoption in 2000 is foreseen by the end of 2012.

Definition

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.

Fishing capacity

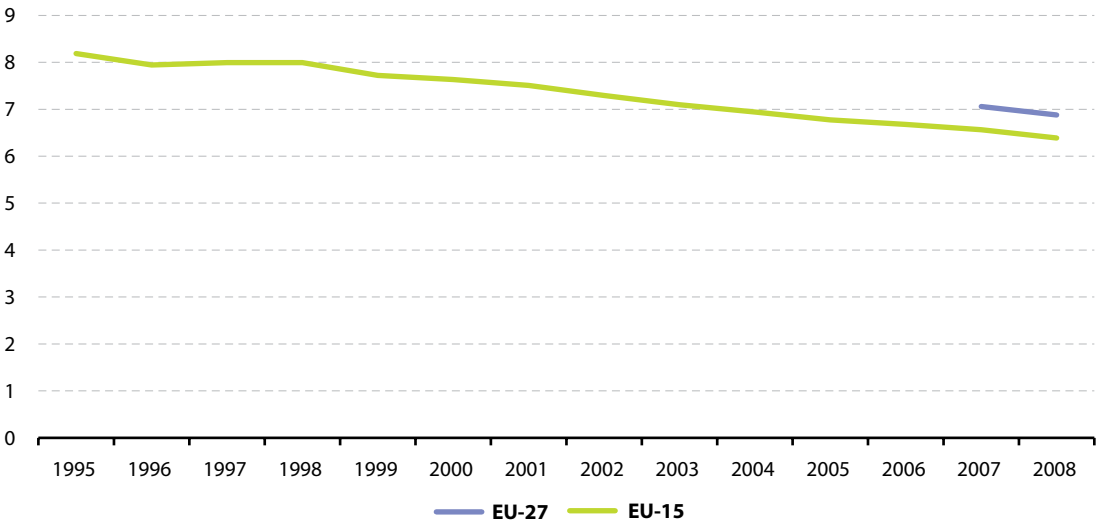
Despite the continuous decrease in EU fishing fleets, as measured by the total engine power of fishing vessels, progress in fishing efficiency means that fishing capacity is still too high for the available fish stocks

Commentary

Whilst the total engine power 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 2.28 % on average per year from 1995 to 2000. From 2000 to 2008 the average annual rate of decrease declined to 1.64 %. According to the Green Paper on the Reform of the Common Fisheries Policy ([23]), these decreases may well have been offset by technological progress which is estimated to increase fishing efficiency by approximately 2-3 % per year ([24]). 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. One instrument used by the EU to manage fishing activity is the issuing of fishing quotas or Total Allowable Catch (TAC) (usually per species/ year/ region/ Member State), compliance with which is monitored at landing. The adverse effects of fishing quotas have however gained publicity as one of the drivers of the discards problem, i.e. throwing overboard of by-catches or surplus fish catches.

Figure 8.11: Fishing fleet, total engine power
(million kilowatts)



Change over period 2000-2008:
Average annual rate of change (EU-15): -2.2 %

Source: Eurostat (online data code: tsdnr420)

Indicator relevance

Fishing capacity is expressed here in terms of the total engine power of the fishing fleet, which provides a partial indication of the size of the fleet. Besides engine power, fishing potential or capacity of a fleet is also a function of the enclosed volume of all vessels and the efficiency of the fleet (related to the fishing gear used by the fleet). Moreover, the actual fishing effort of a fleet will depend on how the fishing capacity is put at use, i.e. the actual fishing activity.

([23]) Commission Green Paper, *Reform of the Common Fisheries Policy*, COM(2009)163.
([24]) Banks, R., Cunningham, S., Davidse, W.P., Lindebo, E., Reed, A., Sourisseau, E. and De Wilde, J.W., *The impact of technological progress on fishing effort*, report prepared for the European Commission, 2002.

In 2008 the Commission acknowledged the overcapacity of European fishing fleets which can often exert a fishing effort on available stocks that can exceed sustainable levels up to two or three times ([25]). Despite subsidies that have aimed to provide an incentive for fleet reduction, e.g. the scrapping of vessels, others have supported the modernisation of fishing fleet, hereby potentially increasing fishing efficiency. Currently in the framework of the Common Fisheries Policy (CFP) there are no binding fleet reduction targets.

The Green Paper on the reform of the Common Fisheries Policy states that 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 EU 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. A reformed CFP should enter into force by 2013.

Definition

Fishing capacity is measured here in terms of the total engine power of the fishing fleet. The EU-data are derived from the Community Fishing Fleet Register. The data are for the registered fishing vessels of EU Member States. In general the data refer to the situation of the national fleets on 31 December of the reference year.

([25]) Commission working document, *Reflections on further reform of the Common Fisheries Policy*, 2008

Increase in built-up land

During the period from 2000 to 2006 artificial surfaces as a whole grew in the EU. The main increases were in sites for mining, dumping and construction

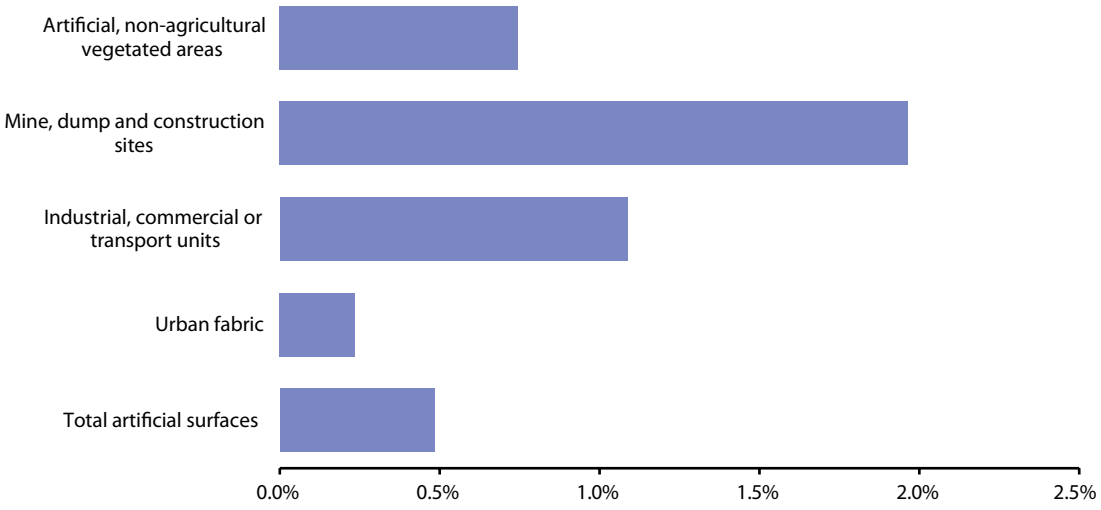
Commentary

Artificial surfaces are increasing at the expense of semi-natural and agricultural land

Built-up land is continuously encroaching on farmland and semi-natural land. The category 'mine, dump and construction sites' experienced the highest rate of growth. This is accounted for by an annual rate of increase of construction sites of 6.2 %. It is particularly significant that road and rail networks showed the second highest growth rate (4.1 % annual average growth rate) as well as an increase of this rate compared to the 1990-2000 period. The fragmentation of ecosystems associated with such extensive linear structures is a major pressure on biodiversity, limiting the range available to animals for migration, exchange of genetic material between populations, breeding or finding food.

The entire scope of degradation and conversion of natural land is greater than what can be reflected by the indicators presented here. Two additional factors need to be taken into consideration, namely the critical increase of pressure on ecosystems and species applied by both the effects of the intensification of agriculture and the conversion of high value natural areas to farmland. If natural areas and ecosystems become too small, they might stop delivering their services, such as the provision of clean air and water, water retention and carbon intake. Also, more indirect effects of the increase of artificial surfaces include the disturbance of hydrological processes leading for example to increased soil erosion by water (due to larger volumes of run-off on impermeable surfaces) and consequently to a deterioration of water quality.

Figure 8.12: Average annual change in artificial surfaces, by category, EU, 2000-2006 (%)



Period evaluated: 2000-2006

Average annual rates of change

Total artificial surfaces: +0.5 %

Mine, dump and construction sites: +2.0 %

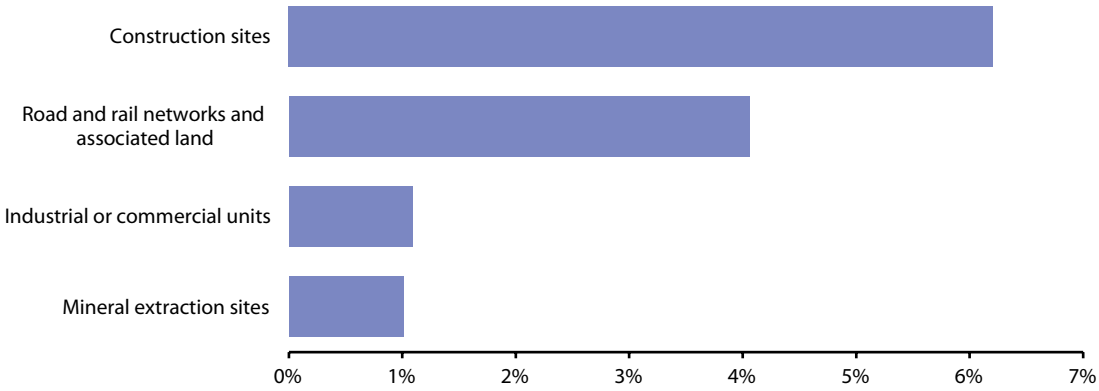
Industrial, commercial or transport units: +1.1 %

NB: EU aggregate based on the following 23 Member States: BE, BG, CZ, DK, DE, EE, IE, ES, FR, IT, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI

Source: European Environment Agency, Eurostat

Figure 8.13: Average annual change of the land cover classes with the highest rate of change, EU, 2000-2006
(%)

Change over period 2000-2006: Average annual rates of change
Construction sites: +6.2 %
Road and rail networks and associated land: +4.1 %
Industrial or commercial units: +1.1 %



NB: EU aggregate based on the following 23 Member States: BE, BG, CZ, DK, DE, EE, IE, ES, FR, IT, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI

Source: European Environment Agency, Eurostat.

Indicator relevance

Increases in artificial land cover are almost always irreversible and include the sealing of land and fragmentation of ecosystems, and are consequently an important threat to habitats and biodiversity and the ecosystem services they provide. The overall objective of the EU 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. In the framework of its post-2010 European Biodiversity strategy, the EU is developing an approach to safeguard ecosystems and biodiversity by increasingly considering their role within spatial planning and infrastructure with regard to climate change adaptation and mitigation and protection against disaster. This green infrastructure strategy will be developed over the course of 2011.

Definition

This indicator shows the percentage change observed in artificial land cover between the years 2000 and 2006.

Forest increment and fellings

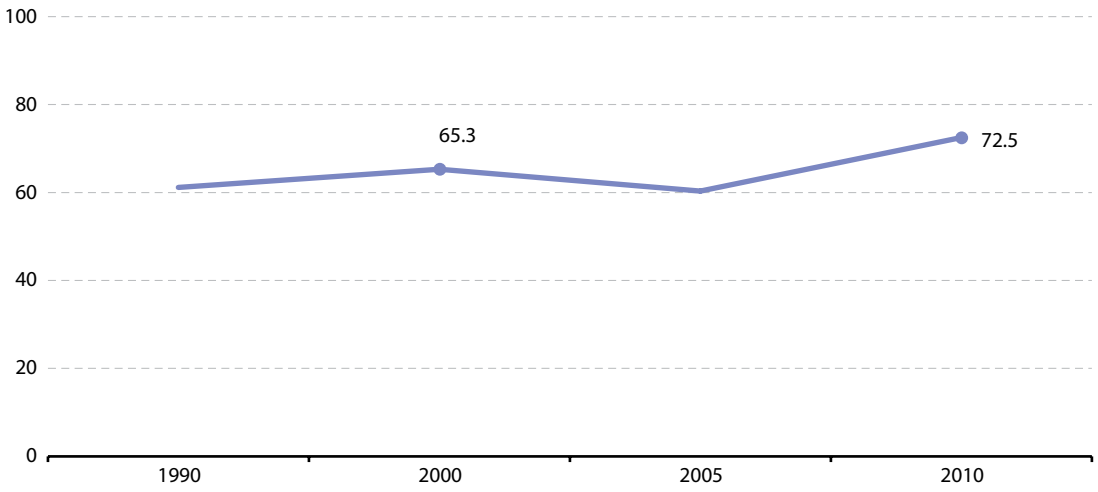
In 2010 the forest utilisation rate remained well within the sustainability threshold of 100 %

Commentary

Fellings remain sustainable

Whereas fellings increased slightly between 2000 and 2010, increment fell considerably over the same period. This is reflected in a substantial increase in the forest utilisation rate (the ratio between fellings and increment). This increase in the forest utilisation rate can be seen in both a positive and negative light. One positive aspect is that if older trees are removed it reduces the vulnerability of forests to fires and disease. However, it also means that there is less growing stock for future utilisation.

Figure 8.14: Forest utilisation rate
(fellings as % of increment)



Period evaluated: 2000-2010
Average annual rates of change
2000 to 2010: +1.1 %
1990 to 2000: +0.7 %

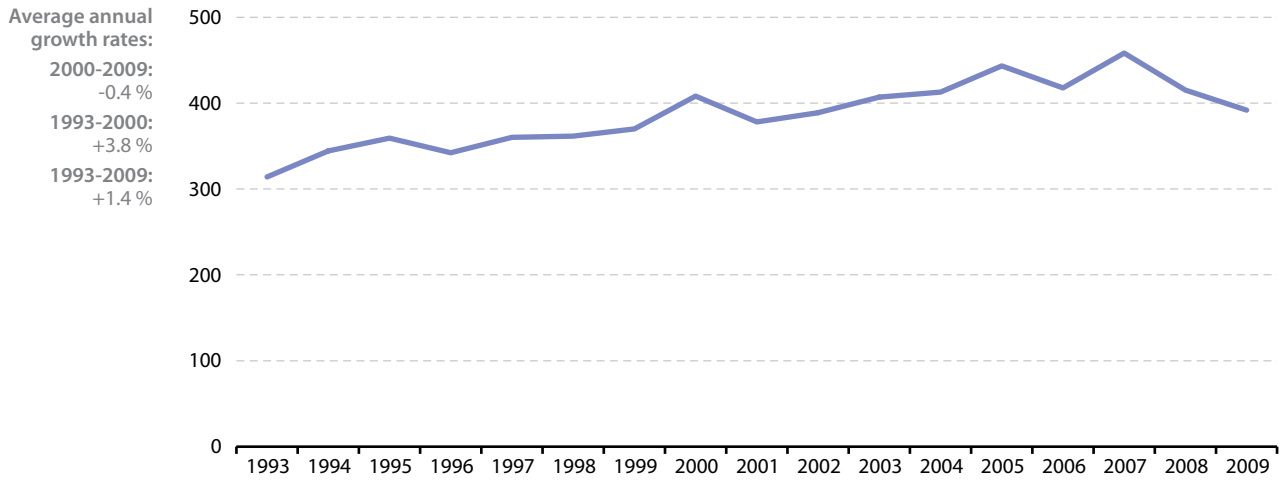
Source: Eurostat (online data code: tsdnr520)

Despite two years of decline, the long-term trend is for increased removals

The European Union is a major wood producer. Demand for construction materials, wood fibre, other wood products, and biomass, as well as exports, are the most important drivers of this production. Although removals fell slightly between 2000 and 2009, the trend up to 2007 was for increasing removals, and it was only the substantial falls in 2008 and 2009, reflecting the fall in demand for construction materials and other wood products as a result of the economic crisis, which took removals below the level of 2000. Over the previous period, from 1993 to 2000, removals in the EU-27 increased rather rapidly.

The especially sharp increases in 2000 (10.3 %), 2005 (7.4 %) and 2007 (9.7 %) were due to timber which fell in severe storms affecting some regions of Europe.

Figure 8.15: Forest removals, EU-27
(million m³)



Source: Eurostat

Indicator relevance

This indicator highlights the sustainability of timber production over time as well as the current availability and the potential for future availability of timber. If fellings are in excess of increment, then more wood is removed than what is naturally replenished through growth, and management is not sustainable.

The EU Sustainable Development Strategy states that action aiming at the conservation and management of natural resources should include strengthened sustainable forest management. It calls for an effective contribution to achieving the four United Nations Global Objectives on Forests ([26]) by 2015, which include increasing efforts to prevent forest degradation. The EU Forest Action Plan ([27]) includes the objective to 'improve the long-term competitiveness of the forest sector and to enhance the sustainable use of forest products and services'. The Commission also published a Green Paper ([28]) which launched a debate on future options for a common EU approach to forest management in the context of climate adaptation.

Definition

The indicator is defined as the ratio of annual fellings to net annual increment in forest available for wood supply. It is expressed as a percentage.

Removals is used here as a proxy for fellings. Fellings refer to 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. Removals (the term is synonymous with roundwood production) are equal to fellings less unrecovered fellings.

Net annual increment is defined as gross increment less natural losses over a given period. Gross increment is the average volume of increment of all trees (all diameters, down to a stated minimum diameter) over a given period. It is reported in cubic metres overbark (i.e. including bark). Also included is the recruitment of small trees when they reach the minimum diameter.

([26]) Economic and Social Council of the United Nations, Outcome of the sixth session of the United Nations Forum on Forests, resolution 2006/49, pp. 3-4.
([27]) Commission communication, *On an EU Forest Action Plan*, COM(2006) 302.
([28]) Commission Green Paper, *On forest protection and information in the EU: Preparing forests for climate change*, COM(2010) 66.

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 20 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 136 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.

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 by the European Environment Agency through the WISE State of the Environment reporting (WISE-SoE). Time coverage varies from country to country. Concentrations are expressed as the average of annual mean concentrations.

For BOD and ammonium, up to three-year gaps of missing values have been interpolated or extrapolated. Only complete series with no missing values after this interpolation/extrapolation are included. Most countries measure organic matter as BOD over five days but a few countries measure BOD over seven days (Estonia, Finland and part of series for Lithuania and Latvia), which may introduce a small uncertainty in comparisons between countries. BOD7 data have been recalculated into BOD5.

For nitrate and orthophosphate only stations with time series consisting of at least seven years are included. Some countries measure nitrate plus nitrite (= total oxidised nitrogen) As nitrite is usually a few percent of total oxidised nitrogen, total oxidised nitrogen has been used for some countries (Denmark, Finland, Hungary and Sweden).

The indicator is pan-European, including both Member and non-member States. The countries included for each indicator (with number of stations included per country in parenthesis) are:

- BOD: AL (9), AT (145), BE (26), BG (85), CZ (70), DK (35), EE (53), ES (227), FI (23), FR (306), HU (98), IE (6), LT (28), LU (3), LV (39), MK (9), SI (22), SK (53), UK (29).
- Total ammonium: AL (9), AT (145), BE (32), BG (80), DE (147), EE (53), ES (356), FI (152), FR (285), GB (14), HU (98), IE (5), LT (28), LU (3), LV (39), MK (9), NO (10), PL (105), SE (113), SI (24).
- Nitrate: AL (6), AT (145), BE (29), BG (79), CH (6), CZ (70), DE (147), DK (39), EE (49), ES (356), FI (143), FR (315), HU (98), IE (5), LT (28), LU (3), LV (39), NL (9), NO (10), PL (106), SE (113), SI (24), SK (53), UK (149).
- Orthophosphate: AL (5), AT (124), BE (31), BG (68), CH (6), CZ (70), DE (144), DK (41), EE (53), ES (155), FI (129), FR (295), HU (98), IE (6), LT (28), LU (1), LV (39), NO (10), SE (113), SI (24), SK (24), UK (79).

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. Fishing capacity is measured here in terms of the total engine power of the fishing fleet.

Increase in built-up land

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.

Forest increment and fellings

Increment and fellings are collected from the UNECE/FAO forest resources assessments (FRA). Data are reported in cubic metres overbark (i.e. including bark). The data sources used are State of Europe's Forests 2011 Report (Ministerial Conference on the Protection of Forests in Europe) and FRA 2010.

Removals (or roundwood production) data are based on data from the joint FAO/UNECE/ITTO/Eurostat forest sector questionnaire. Data are reported in cubic metres underbark (i.e. excluding bark). Roundwood is divided into two principal categories: industrial roundwood and fuelwood. Data collected cover the actual removals of the reference year. Removals can sometimes exceed increment due to, for example, windstorms, that make it necessary to remove felled trees quickly from the forest.

Because Eurostat data are underbark, and cover actual removals, while UNECE/FAO data are overbark, and contain projections, the two data sources are not comparable.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9 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 the EU's international commitments' (overall objective of the EU Sustainable Development Strategy for the key challenge 'global poverty and sustainable development challenges')

Overview of main changes

The overall picture presented by the indicators in the global partnership theme is rather favourable. Most of the indicators have shown a favourable tendency since 2000, in particular those on trade flows, financing for sustainable development and natural resource management. However, the EU is not on track for the headline indicator, which measures the share of gross national income dedicated to official development assistance to developing countries. Furthermore, many indicators developed unfavourably over the period 2007 to 2009, in parallel with the global economic crisis.

Table 9.1: Evaluation of changes in the global partnership theme *(EU-27, from 2000)* ([1])

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_2 emissions per capita	Assistance for water supply and sanitation (*)

(*) EU-15.
(**) EU DAC members.

([1]) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Headline indicator

EU has missed its ODA target of 0.56 % of GNI in 2010

The share of gross national income (GNI) spent on official development assistance (ODA) to developing countries increased only slightly between 2005 and 2010. The EU has therefore not met its intermediary target of 0.56 % in 2010. It is also not on track to achieve the target of dedicating 0.7 % of its GNI to ODA by 2015.

Globalisation of trade

Imports from developing countries increased

The share of imports from developing countries in EU imports increased between 2000 and 2010. There was an interruption to this trend in 2009 reflecting the global economic crisis. Imports from the least-developed countries developed in line with the EU objective of increasing their share, but overall remain low. Those EU agricultural subsidies that are classified as trade-distorting by the World Trade Organisation (WTO) decreased by more than two-thirds between 2000 and 2007.

Financing for sustainable development

Overall EU-15 financing for development increased, but economic crisis had negative impact

Overall, the EU-15 provided more money to developing countries in 2009 than in 2000, reflecting the general trend among donors. Moderate progress has been made in raising the shares of low-income countries in foreign direct investment and development assistance. However, the global economic crisis led to a decline in flows between 2007 and 2008. Most indicators had not yet reached their 2007 level again in 2009. Less development assistance was dedicated to debt relief purposes in 2009 than in 2000.

Global resource management

The gap between CO_2 emissions from the EU and from developing countries is narrowing

Indicators of global resource management showed favourable trends. The gap in CO_2 emissions per capita in the EU and developing countries has narrowed, but remains substantial. The closing was due to an increase in CO_2 emissions in developing countries and a decrease in the EU. Assistance for water supply and sanitation increased substantially between 2000 and 2009.

Global partnership and sustainable development

Global partnership reflects mutual responsibility to achieve sustainable development

Global partnership is a concept that originates in the world of development co-operation. It was first coined as part of the Millennium Development Goals (MDGs). Presented as the eighth MDG 'Global Partnership for Economic Development', it has an overarching function providing a roadmap on how to achieve the other seven MDGs, which are in the field of poverty reduction, education, health and environment, among others ([2]). Global partnership in this context reflects mutual responsibility to achieve the goals both by developed and developing countries. At the same time, it also shows that development is a multifaceted concept: it is not only focused on economic development, but clearly takes into account other elements, in areas as environment, gender, health, etc. The multifaceted nature of global partnership points to the interaction between various themes, and the need for policy coherence.

The elements of mutual responsibility and the multifaceted nature of global partnership are taken up in the Brundtland Report ([3]), in the form of two direct links between sustainable development and the concept of global partnership. Firstly, it emphasises the urgency of meeting the essential needs of the world's poor in order to achieve sustainable development, calling directly for the support of developed countries in improving the living standards of the developing parts of the world. Secondly, the title of

([2]) This is also reflected in specific global partnerships that have been created, e.g. in the area of education (Education for All), environment (Global Environment Facility, Carbon Fund), water (Global Water Partnership), health (Global Alliance for Vaccines and Immunization, the Global Fund to fight AIDS, tuberculosis and malaria). Each of these partnerships aims to achieve their specific set objectives. In these partnerships collaboration exist between governments, international organizations, the private sector, NGOs and civil society organisations.

([3]) Report of the World Commission on Environment and Development to the General Assembly of the United Nations, *Our Common Future*,1987.

the report, 'Our Common Future', highlights the importance of collective action and the idea of sitting 'all in one boat', which is the concept of global partnership.

Global partnership was embraced by the European Commission as an important component of sustainable development in a communication in 2002 ([4]). Ever since, the concept of global partnership has been an important element in EU policy making. In 2006, with the renewed Sustainable Development Strategy, the importance of solving the challenges of poverty and sustainable development was again emphasised.

Sustainable development cannot succeed if pursued by the EU in isolation from other countries

The rationale for endorsing global partnership stems from the acknowledgement that today's ever-globalising world is economically, socially and environmentally strongly intertwined and that sustainable development cannot succeed if pursued by the EU in isolation from other countries.

Fighting poverty – a major challenge for sustainable development

At the global level, the ideal of sustainable development is far from being achieved. Notably, over 1 000 million people worldwide were food insecure in 2010 ([5]), lacking sufficient, safe and nutritious food – either because food is not available or because they do not have the money to buy it. Fighting poverty and global inequalities thus remains key to sustainable development. One important example is food security. Developed countries can contribute to enhancing food security by addressing price volatility within food markets, building social protection and safety nets, tackling negative impacts of biofuels and large-scale land acquisition in developing countries, and making their trade policies development-friendly.

Development, peace and security are mutually dependent

According to the European Consensus on Development, a link also 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' ([6]).

EU policies may lead to both positive and negative effects on the environment

EU policies are also related to environmental impacts in developing countries, which in turn have socio-economic implications. One example is climate change. Climate change will have significant adverse impacts on developing countries. Some developing countries are particularly vulnerable to its impacts, especially least-developed countries and small island developing states. Developed countries bear a particular responsibility for causing climate change as they have caused most GHG emissions historically. Moreover, current GHG emissions per capita continue to be higher on average in developed countries than in developing countries. Supporting adaptation to climate change may in turn have positive effects on developing countries. The EU provides funding for mitigation and adaptation to climate change in developing countries, for example through its Global Energy Efficiency and Renewable Energy Fund (GEEREF), Member States' contribution to the Global Environmental Facility or the World Bank climate change funds ([7]).

The EU has an impact on global environmental conditions

At a more general level EU policies may have positive as well as negative effects on the environment. Positive effects include improved environmental management as a result of development cooperation. Negative effects include more emissions and increased use of natural resources as a consequence of trade and foreign investment. The actual effects depend on the extent to which environmental objectives are taken into account in various EU policies. Observing environmental standards in development cooperation, and economic and trade activities in developing countries may reduce negative impacts.

The poor are most vulnerable to natural disasters

Natural disasters are a particular example of how EU development cooperation is related to environmental conditions in developing countries. Natural disasters impede sustainable development, as has been evident from natural disasters over the past few years. For example, the earthquake in Haiti in January 2010 and the floods in Pakistan during the summer of 2010 resulted not only in a humanitarian catastrophe, but also caused huge economic damage. Since developing countries usually do not possess the financial and technical capacity necessary for coping with natural disasters, support from developed countries is essential. It may become even more important in the near future if climate change results in more frequent and more violent events.

([4]) Commission communication, *Towards a global partnership for sustainable development*, COM(2002) 82.
([5]) Commission communication, *An EU policy framework to assist developing countries in addressing food security challenges*, COM(2010) 127.
([6]) Joint statement by the Council and the representatives of the Governments of the Member States meeting within the Council, the European Parliament and the Commission on European Union Development Policy, *The European Consensus*.
([7]) See for example the website of the World Bank's Clean Investment Funds (http://www.climateinvestmentfunds.org/cif/).

Global partnership is linked to the EU's socio-economic dimension

Development cooperation is also not a one-way street: economic growth in the EU is likely to be linked to increased public and private funding for development and vice versa. Financing for development indirectly contributes to EU economic prosperity: it creates markets in developing countries, which consecutively may lead to a creation of jobs in the EU.

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, 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 by 2015 with an intermediate target of 0.56 % in 2010;
- Promote sustainable development in the context of the negotiations of the World Trade Organisation (WTO), in accordance with the preamble to the Marrakesh Agreement establishing the WTO 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.

Further reading on global partnership

Commission communication, *Enhancing EU Accountability on Financing for Development towards the EU Official Development Assistance Peer Review*, COM(2011) 218

Commission communication, *An EU policy framework to assist developing countries in addressing food security challenges*, COM(2010) 127

Commission Green Paper, *EU development policy in support of inclusive growth and sustainable development Increasing the impact of EU development policy*, COM(2010) 629 final, 2010

Commission staff working paper, *EU Accountability Report 2011 on Financing for Development: Review of progress of the EU and its Member States*, SEC(2011) 500

European Parliament, Council, Commission, *The European Consensus on Development*, 2006

High-Level Forum on Aid Effectiveness, *Paris Declaration on Aid Effectiveness*, Paris, 2005

Organisation for Economic Co-operation and Development, *Development Cooperation Report 2010*, Paris, 2010

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

United Nations, *Monterrey Consensus on Financing for Development*, 2003

Official development assistance

The EU has missed the intermediate official development assistance (ODA) target of 0.56 % in 2010. Furthermore, progress between 2005 and 2010 appears to be too weak to allow the target of dedicating 0.7 % of gross national income (GNI) to ODA in 2015 to be reached

Commentary

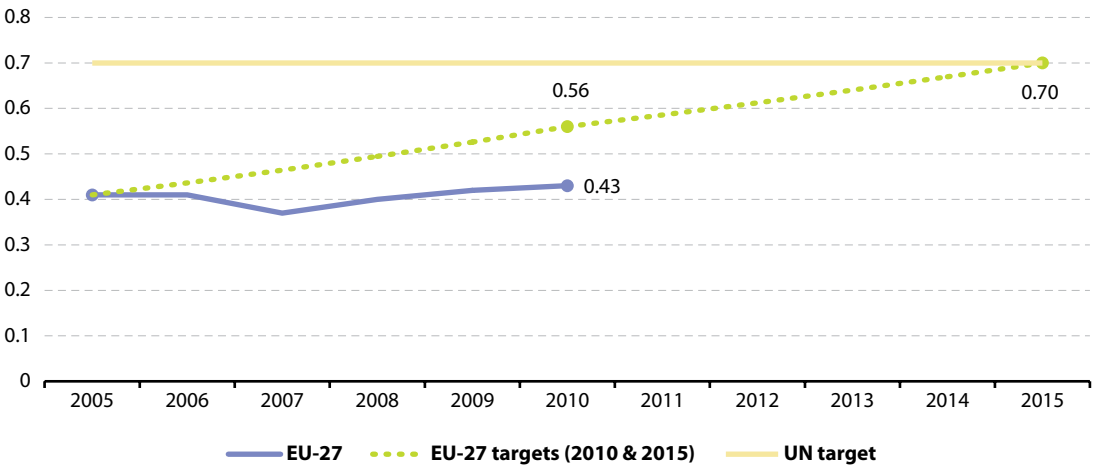
The EU missed the 2010 target on ODA spending

In 2005 the EU established time frames for achieving a contribution of 0.7 % of GNI to ODA, consistent with a longstanding UN target. It also set an intermediary target of 0.56 % of GNI on ODA by 2010.

In 2010 the EU spent 0.43 % of its GNI on ODA, 0.02 percentage points more than in 2005. Thus it did not reach the intermediate target. It also seems unlikely that the EU will achieve its 2015 target. At current growth rates, it would only happen around 2040.

Within the overall ODA commitment, the EU, in 2008, pledged to collectively spend at least 0.15 % of its combined GNI by 2010 on ODA to the least-developed countries (LDCs). This target has been only narrowly missed: Combined EU ODA to LDCs corresponded to 0.13% of GNI in 2010, based on preliminary data available ([8]).

Figure 9.1: Official development assistance as share of gross national income (%)



Period evaluated: 2005-2010

Distance to target path in 2010: -0.13 percentage points

Average annual growth rate: +1.0 %

Source: OECD, Eurostat (online data code: tsdgp100)

ODA rates vary widely across Member States

Contributions varied considerably between Member States in 2010, ranging from 0.06 % of GNI spent for ODA purposes by Latvia, to 1.09 % of GNI dedicated to it by Luxembourg. Belgium, Denmark, Luxembourg, Sweden, the UK and the Netherlands met the 0.56 % target in 2010.

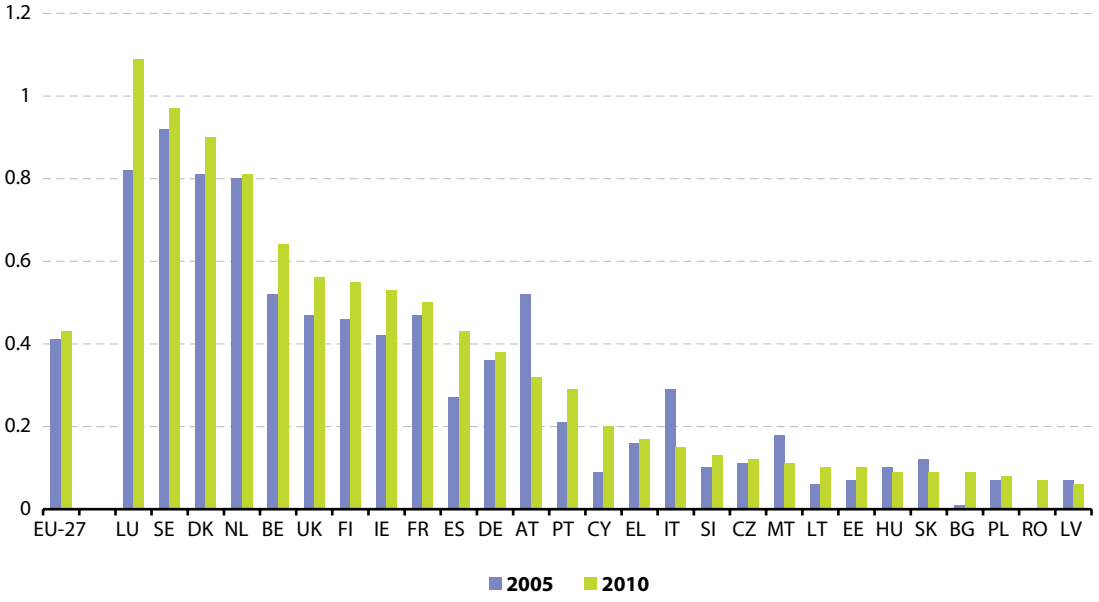
From 2005 to 2010, major increase both in absolute and relative terms was achieved by Spain. Increases in other Member States were low in absolute terms – less than 0.1 percentage points – but high in relative terms. For example, Bulgaria provided nine times more assistance in 2010 as in 2005 (0.09 % vs. 0.01 %).

At the international level, ODA disbursements reached an all-time high in 2010. However, only five donor countries reached the 0.7 % target; four of them were Member States of the EU.

([8]) Commission communication, *Enhancing EU Accountability on Financing for Development towards the EU Official Development Assistance Peer Review*, COM(2011) 218.

Figure 9.2: Official development assistance, by country
(% of gross national income)

Key figures in 2010
Highest: Luxembourg: 1.1 %
Lowest: Latvia: 0.06 %
EU-27 average: 0.43 %



Source: OECD, Eurostat (online data code: tsdgp100)

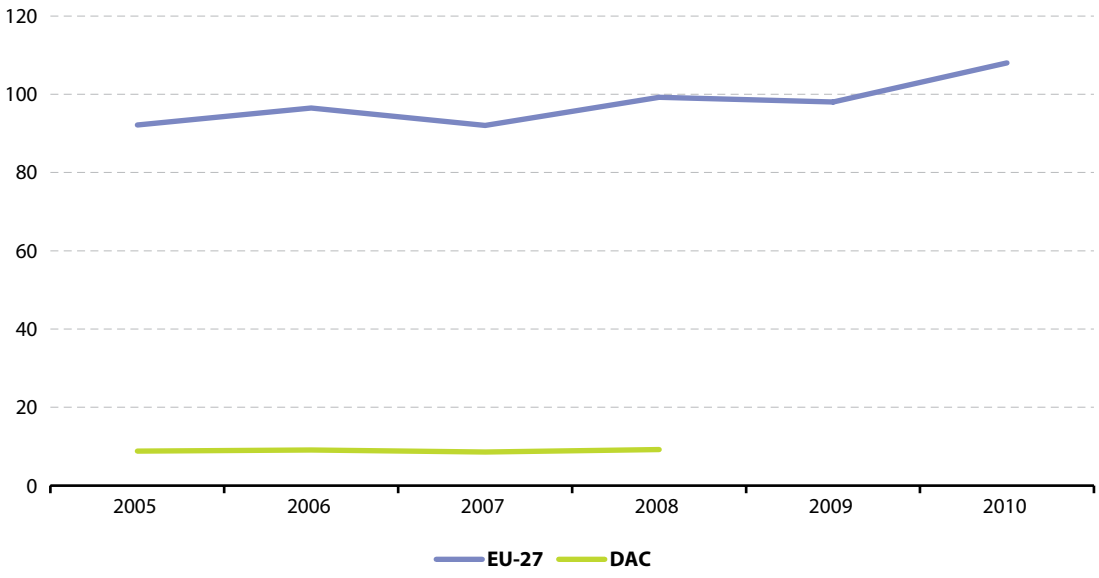
ODA spent per EU inhabitant grew between 2005 and 2010

Furthermore, ODA can be analysed in relation to the amount of assistance spent per inhabitant in donor countries and received per inhabitant in recipient countries. The average contribution to ODA per EU citizen was EUR 108 in 2010, a total increase of 17 % as compared to 2005.

People living in recipient countries received EUR 9.2 on average in EU assistance per inhabitant in 2008. Compared to EUR 8.8 in 2005, this represents an overall growth of 4.5 %.

Figure 9.3: Official development assistance per capita in donor and recipient countries
(EUR per inhabitant)

Absolute growth in ODA per capita
EU (2005-2010): +EUR 16
Developing countries (2005-2008): + EUR 0.4

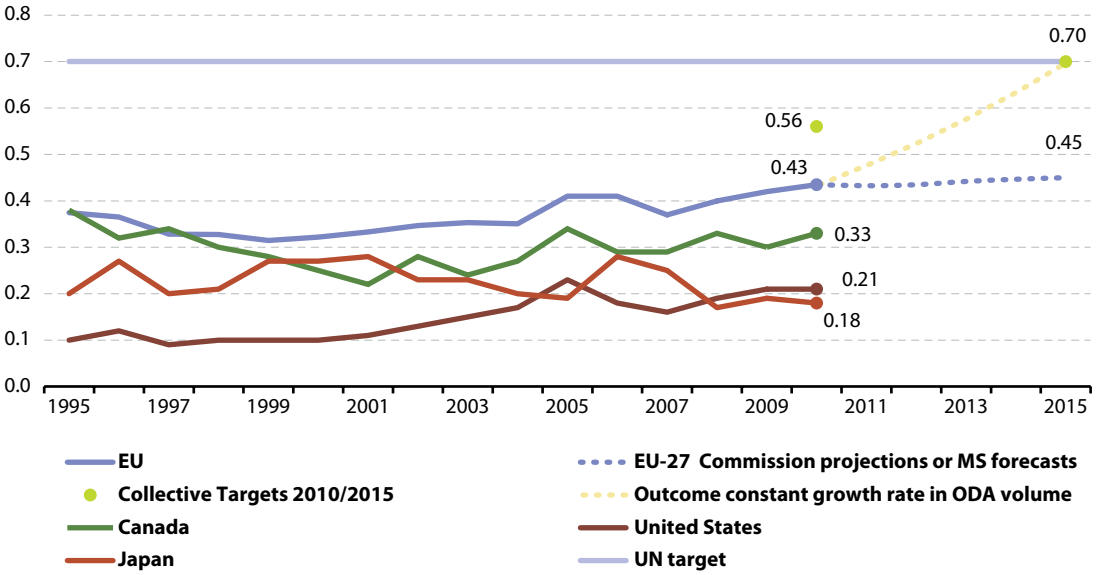


Source: OECD, Eurostat (online data code: tsdgp520)

Over the period 2005–2010, the EU and its Member States accounted for 57 % of net ODA to developing countries from all OECD DAC and EU donors and for 65 % of the global EUR 25 700 million increases in ODA. In 2010, the OECD DAC and EU donors' ODA reached EUR 97 200 million in nominal terms. The EU as a whole provides 58 % of this aid.

At the EU level, an important funding instrument for development cooperation is the European Development Fund (EDF). The 9th EDF (2000-2007) contained EUR 17 900 million; EUR 22 700 million have been allocated to the 10th EDF (2008-2013).

Figure 9.4: Official development assistance as share of gross national income by donor (%)



Key figures in 2010

ODA spending:

Total:
EUR 97 200 million

EU:
EUR 53 800 million

Japan:
EUR 8 300 million

USA:
EUR 22 800 million

Canada:
EUR 3 900 million

NB: Multilateral Agencies excluding data for EU Institutions (which are shown separately), EU means EU-15 until 2004, EU-25 until 2007 and EU-27 after 2007.

Source: Commission Services, OECD, Eurostat (online data code: tsdgp100)

Indicator relevance

The percentage of GNI that the EU spends on ODA to developing countries is a measure of funds that directly support development in developing countries. However, for positive change towards more sustainable development to happen, the ways in which ODA is used is as important as the quantity of ODA made available.

ODA per capita is a contextual indicator: comparing the contribution of assistance per EU citizen to the amount received by each inhabitant of the country on the OECD Development Assistance Committee (DAC) List of Aid Recipients enables comparisons across countries. The main funding instrument for EU development cooperation is the European Development Fund, which is programmed for multi-annual periods.

The EU 0.7 % target reflects a long-standing international objective. First pledged in a 1970 UN General Assembly Resolution, it has been affirmed in many international conferences and agreements over the years, including the 2002 Monterrey Consensus and the World Summit on Sustainable Development held in Johannesburg ([9]). The EU Sustainable Development Strategy stipulates that the EU should reach the 0.7 % target 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

The indicator show net disbursement of ODA at current prices. ODA are grants or loans administered by the official sector with the promotion of the economic development and welfare of developing countries as the main objective. To be eligible as ODA, grants and loans must be concessional in character with a grant element of at least 25 %. The indicator covers aid from EU countries to the countries on 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.

([9]) Johannesburg Plan of Implementation, para. 85.

Imports from developing countries

Between 2000 and 2010 EU imports from developing countries increased substantially

Commentary

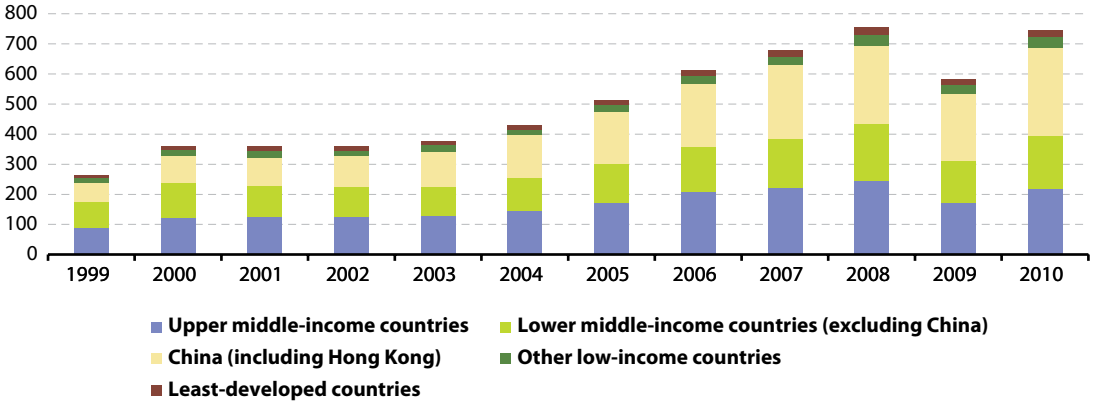
EU imports from developing countries grew, but the economic crisis had lead to an temporary interruption of this trend

In 2010 EU imports from developing countries amounted to almost half of total EU imports. The indicator shows progress towards the objective of increasing the share of imports from developing countries. From 2000 to 2010 imports grew at an average annual rate of 5.4 %. However, there was a steep decrease in developing in 2009, reflecting the global economic crisis.

Among developing countries, China was the most important trade partner. Its imports to the EU were affected less by the economic crisis than those from other countries: while imports from China made up 34.4 % of total EU imports from developing countries in 2008, the share was 39.2 % in 2010. China was the largest single importer to the EU in 2010, followed by the United States and Russia

Figure 9.5: Imports from developing countries by income group, EU-27
(EUR 1 000 million)

Period evaluated: 2000-2010 (total imports)
Average annual growth rate: +7.7 %
Strongest absolute change: China: +EUR 205 200 million
Strongest relative change: China: + 156 %



Source: Eurostat (online data code: tsdgp210)

Indicator relevance

The contribution of open trade to sustainable development was acknowledged as long ago as 1992: 'Agenda 21' considered that an open multilateral trade system could ensure a better allocation and better use of resources, thereby contributing to development and the protection of the environment. Various international declarations emphasise the importance of a greater share in world trade for developing countries, including the Doha Declaration on Financing for Development. In its Sustainable Development Strategy, the EU commits itself to undertaking efforts that international trade and investment are used as a tool to achieve genuine global sustainable development. The EU's trade policy is based on these principles. The Generalised System of Preferences (GSP) aims at helping developing countries by making it easier for them to export their products to the European Union ([10]). It also dedicates a share of its ODA to 'Aid for Trade' ([11]), with the objective of supporting developing countries in enhancing their capacity to trade. EU import statistics indicate to what extent developing countries can access the EU market, but provide no measure of the use of environmentally and socially sustainable modes of production in developing countries. However, sustainability impact assessments consider the impact of each trade negotiation in the economic, social and environmental terms.

([10]) European Commission, *More benefits from preferential trade tariffs for countries most in need: Reform of the EU Generalised System of Preferences*, Brussels, 10 May 2011, MEMO/11/284.
([11]) Commission communication, *Towards an EU Aid for Trade strategy – the Commission's contribution*, COM(2007) 163.

Definition

This indicator is defined as the value at current prices of EU imports from the countries on the DAC list; these countries are also referred to as 'developing countries' in this section. The indicator is successively broken down by income groups of countries following the World Bank definition.

Share of imports from least-developed countries

Least-developed countries' share of total imports into the EU was somewhat higher in 2010 than in 2000

Commentary

LDCs' share in imports grew but at a slower pace than overall developing country imports

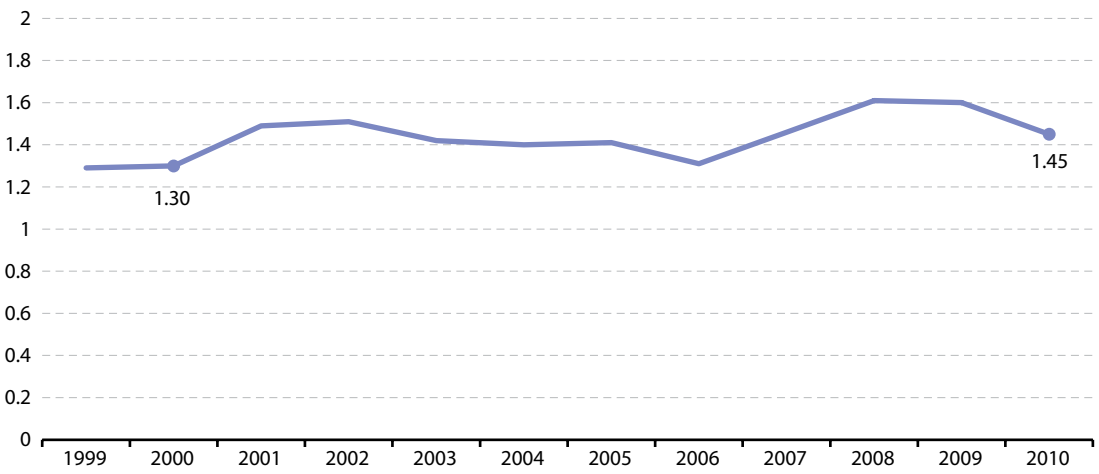
The share of imports from least-developed countries (LDCs) in all imports from outside the EU increased. This growth indicates progress towards the objective of increasing the share of imports from the 50 poorest countries of the world.

Manufactured goods accounted for about half of LDC's imports in 2010, slightly less than in 2000. Mineral fuels and similar products made up more than one-third, up from only slightly more than 10 % in 2000. Their share had peaked in 2008. The share of oil imports from Africa (where most LDCs are situated) in total EU oil import volumes has been relatively stable at about 20 % since 2000 ([12]) and the higher share of oil in the monetary value of EU imports therefore probably reflects the relatively high oil prices in 2008 and 2009.

Figure 9.6: Share of imports from least-developed countries in total extra-EU imports, EU-27

(%)

Period evaluated: 2000-2010
Average annual growth rate: +1. 2 %
Absolute change: +0.15 percentage points



Source: Eurostat (online data codes: tsdgp210, tet00038)

Indicator relevance

The contribution of open trade to sustainable development was acknowledged as early as June in Rio. 'Agenda 21' considered that an open multilateral trade system could ensure a better allocation and better use of resources, thereby contributing to foster development and the protection of the environment. Various international declarations emphasise the importance of a greater share in world trade for developing countries, including the Doha Declaration on Financing for Development. In its Sustainable Development Strategy, the EU commits to undertake efforts that international trade and investment are used as a tool to achieve genuine global sustainable development. The EU's trade policy is based on these principles. LDCs benefit from duty-free, quota-free access to the European market for all products – except for arms and ammunition (EBA). LDCs will also continue to benefit from the recently amended, more favourable, GSP Rules of Origin.

([12]) European Commission, Market Observatory, *EU crude oil imports, data collected pursuant to Regulation (EC) No 2964/95 introducing registration for crude oil imports and deliveries in the Community.*

The EU also dedicates a share of its ODA to 'Aid for Trade', with the objective of supporting developing countries' in enhancing their capacity to trade. Import statistics indicate to what extent LDCs can access the EU market, but provide no measure of the use of environmentally and socially sustainable modes of production in developing countries.

Definition

This indicator is defined as the value of EU imports from LDCs at current prices. The classification of least-developed countries follows the World Bank definition.

Subsidies for EU agriculture

Between 2000 and 2007 the amount of trade-distorting EU agricultural subsidies decreased substantially, resulting in a growing distance from the ceiling established under the World Trade Organization's Agreement on Agriculture

Commentary

Favourable downward trend of trade-distorting agricultural subsidies

In 2000, the EU spent EUR 44 419 million on agriculture subsidies that are qualified as trade-distorting according to the rules of the World Trade Organisation (WTO). In 2007, this amount had been reduced to EUR 12 354 million, less than a third. This represents an average annual decrease of 16.7 % between 2000 and 2009. The EU has thus made progress on reducing agricultural subsidies that are considered trade-distorting and have to be reduced according to the rules of the WTO.

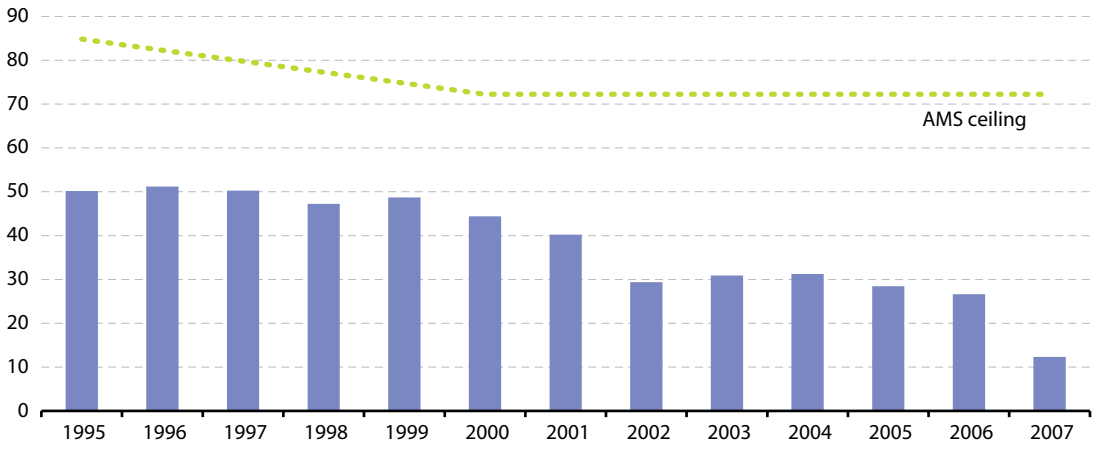
A sharp decline occurred in particular between 2006 and 2007, when the subsidies declined by more than half. The decline of those subsidies considered trade-distorting under the WTO agreements is a consequence of changes in EU agricultural policy: subsidies are increasingly being decoupled from amounts produced.

The EU remained below its WTO ceiling for support

The WTO Agreement on Agriculture required a reduction of certain subsidies between 1995 and 2000. Since then, the ceiling has remained unchanged. The EU has remained below the agreed ceiling in each year since the agreement entered into force. It shows a growing distance to the ceiling.

Figure 9.7: Aggregated measurement of support for agriculture, EU-27
(EUR 1 000 million)

Period evaluated: 2000-2007
Average annual change rate: -16.7 %
Relative change: -72.2 %
Absolute change: -EUR 32 065 million



Source: EU Commission services, World Trade Organisation, Eurostat (online data code: tsdgp240)

Indicator relevance

Agricultural subsidies make EU agricultural products cheaper and thus make it harder for producers from developing countries to compete with EU producers in agricultural markets. While the indicator presents the figures for subsidies qualified as trade-distorting according to WTO rules, other EU agricultural subsidies may also make it harder for developing countries to compete with EU producers ([13]).

This indicator gives an insight into one of the international commitments mentioned among the operational objectives of the EU Sustainable Development Strategy. In the field of agricultural trade, the European Consensus on Development requires that the EU substantially reduce the level of trade distortion related to its support measures to the agricultural sector.

([13]) See United Nations Conference on Trade And Development, *Green Box Subsidies: A Theoretical and Empirical Assessment*, UNCTAD, 2007.

Definition

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 WTO 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. AMS is only calculated for the EU as a whole. There is no breakdown by Member State.

Financing for developing countries

Between 2000 and 2009 the total EU-15 financing for developing countries experienced ups and downs but grew overall, with funding from public sources as the main driver

Commentary

The increase in EU financing for development between 2000 and 2009 was slower than in the previous decade

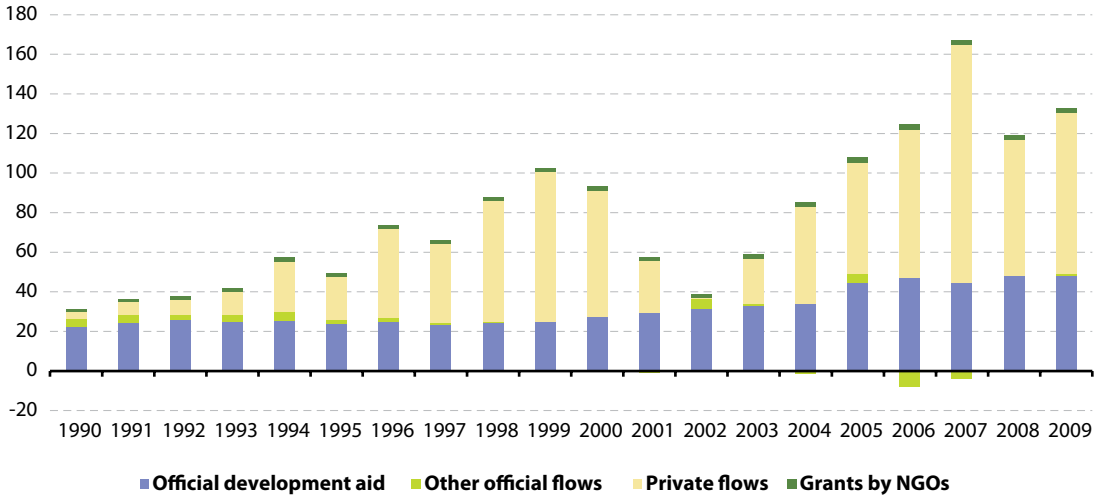
Total EU-15 financing for developing countries, comprising flows from the public and private sector, was EUR 132 677 million in 2009. This corresponds to an annual average increase of 4.1 % between 2000 and 2009. In the decade before (1990-2000), the average annual growth had been 11.5 %. Thus, financial flows to developing countries grew more slowly than in the previous decade.

The category that grew most strongly in absolute terms was EU-15 ODA, which grew by EUR 20 954 million between 2000 and 2009. The second largest absolute came from FDI, where flows to developing countries increased by EUR 17 601 million between 2000 and 2009. In percentage terms, the category of flows that grew most strongly was that of official flows other than ODA. Other official flows are monetary resources from the public sector that do not qualify as ODA, either because they are not primarily aimed at development, or because they have a grant element of less than 25 %. A typical example is military aid. Such flows were negative, i.e. from developing countries to the EU in 2000, but amounted to EUR 631 million in 2009. ODA grew by a mean annual 6.5 %, financing through non-governmental organisations (NGOs) by almost 1 % annually, and financing from the private sector by 2.8 % per year on average between 2000 and2009.

However, the global economic crisis is likely to have had an impact on overall financing for development. In 2009 overall EU-15 financing for development was just 80 % of what it had been in 2007; private sector financing decreased by a third between 2007 and 2009.

Figure 9.8: Financing for developing countries, by type, EU-15
(EUR 1 000 million)

Period evaluated: 2000-2009
Average annual growth rate: Total: +4.0 %
Strongest absolute change: ODA: +EUR 20 955 million



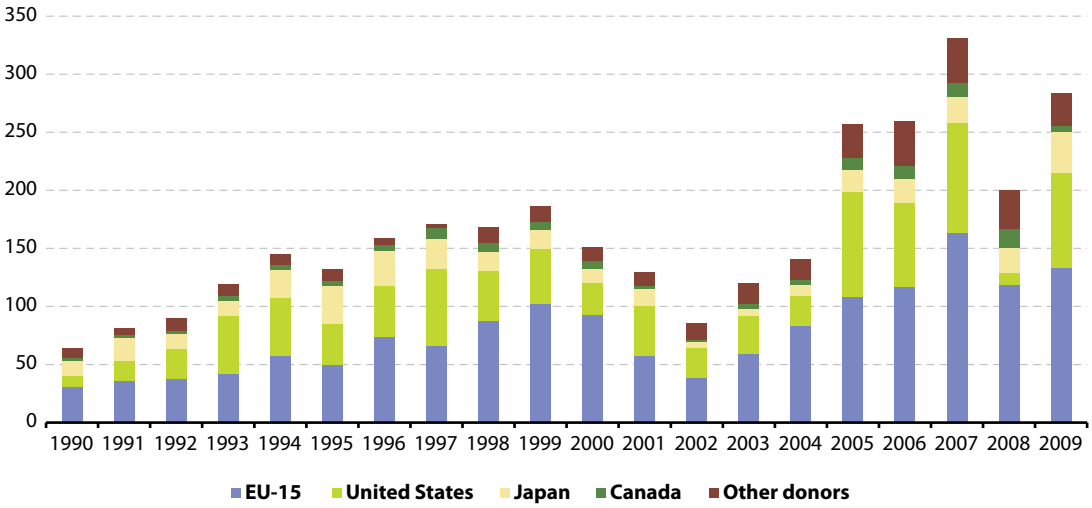
Source: OECD, Eurostat (online data code: tsdgp310)

Almost all donors increased their financing for development since 2000

Furthermore, donor contributes to developing countries can be compared in absolute terms. The donors reflected in the analysis are the EU-15, United States, Japan, Canada and other donors. In 2009, these donors contributed between EUR 5 262 million (Canada) and EUR 132 676 million (EU-15). Apart from Canada, which sharply reduced its contribution to financing for development, all donors increased their spending, ranging from 4.0 % (EU-15) to 13.1 % (United States) annual growth rate between 2000 and 2009.

Overall, ODA amounts grew more slowly between 2000 and 2009 (7.2 % annual growth rate) than they had between 1990 and 2000 (9 % annual growth rate).

Figure 9.9: Financing for developing countries, by donor
(EUR 1 000 million)



Change over period 2000-2009:

Average annual growth rate:
Total: +7.2 %

Strongest absolute change:
United States:
+EUR 55 306 million

Strongest relative change:
United States:
+302 %

Source: OECD, Eurostat (online data code: tsdgp310)

Indicator relevance

The Monterrey Consensus highlights that ODA and foreign direct investment (FDI) are key contributors to sustainable development. They provide much-needed funds to developing countries to invest in sectors such as education, health and agriculture. FDI can also create jobs for the local population and, ideally, generate public revenue in developing countries. 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).

Definition

The indicator comprises net disbursements of official ODA, other official flows (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 that 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 higher share of foreign direct investment from DAC EU Members in developing countries in 2009 than in 2000

Commentary

Share of FDI to low-income countries grew moderately between 2000 and 2009

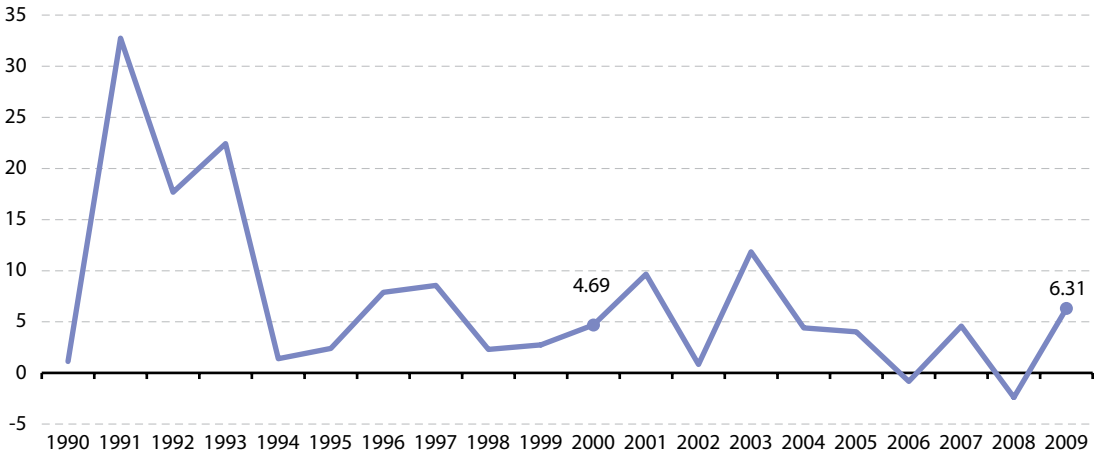
The share of foreign direct investment (FDI) from DAC EU Members ([14]) in least-developed countries (LDCs) and other low-income countries (OLICs) increased between 2000 and 2009. In 2000 the share of these countries in total FDI to developing countries was 4.7 %; in 2009 it was 6.3 %. This is an average annual increase of 7.3 %. FDI to low-income countries thus grew more strongly than FDI to all developing countries, which increased by 3.7 % from 2000 to 2009.

FDI to low-income countries varies considerably across years

For LDCs FDI figures varied considerably over the years; FDI from DAC EU Members to these countries was positive in 4 years since 2000, reaching a high of EUR 1 696 million in 2009. FDI flows to OLICS also varied widely in amounts, but were negative in only one year since 2009. They amounted to only EUR 1.8 million in 2009. FDI to both LDCs and OLICs declined sharply from positive values in 2007 to negative values in 2008. Thus, FDI flows went from developing countries to the EU in 2008, a reflection of the global economic crisis.

Figure 9.10: Share of FDI to low-income countries, DAC EU Members
(% of country allocated FDI in developing countries)

Period evaluated: 2000-2009
Average annual growth rate: +3.3 %
Relative change: +34.4 %
Absolute change: +1.62 percentage points



Source: OECD, Eurostat (online data code: tsdgp320)

Indicator relevance

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 human rights and social and environmental standards are not observed.

([14]) DAC EU Members include BE, DK, DE, EL, ES, FR, IT, NL, AT, PT, FI, SE and the UK.

Definition

FDI includes investments by foreign companies in production facilities or shares 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 is not included. The classification of countries by income groups follows the World Bank definition; LDCs are classified by the UN.

Share of official development assistance for low-income countries

Least-developed countries and other low-income countries – the two poorest groups of developing countries – received a higher share of EU-15 ODA in 2009 than in 2000

Commentary

Almost 60 % of EU-15 ODA goes to low-income countries

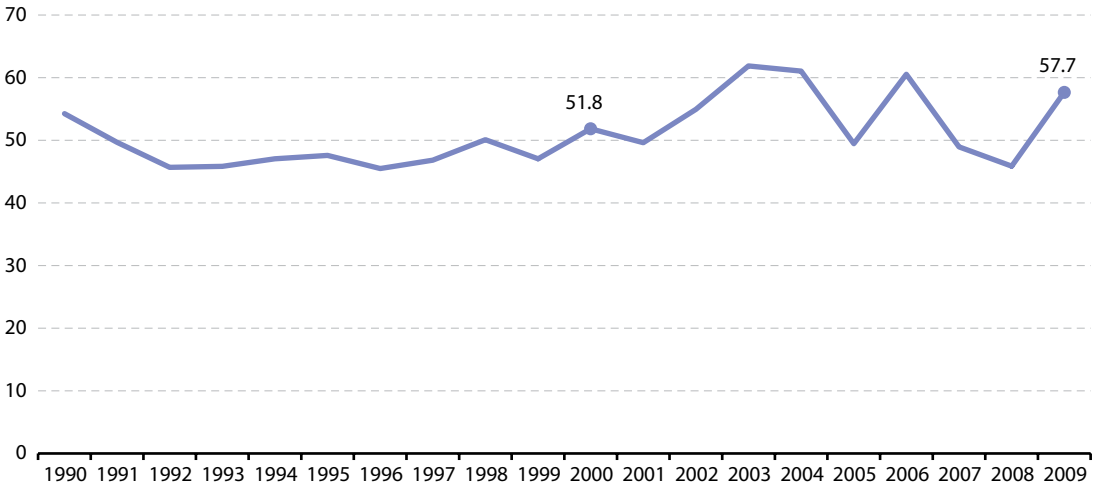
In 2009, least-developed countries (LDCs) and other low-income countries (OLICs) together received 57.7 % of total EU-15 ODA, up from 51.8 % in 2000. This amounts to an average annual growth rate of 1.2 % between 2000 and 2009.

While the share of LDCs remained almost unchanged between 2000 and 2009, the share of OLICs increased from 9.8 % to 15.9 % over the same period. This must be seen in light of the fact that 50 countries were classified as LDCs in 2009, but only twelve countries were classified as OLICs in the same year.

ODA constituted a much more steady flow to low-income countries than foreign direct investment which varied greatly between years. EU-15 ODA amounts to low-income countries exceeded EU-15 FDI to these countries in all years between 2000 and 2009.

Figure 9.11: Share of ODA dedicated to low-income countries, EU-15
(% of country allocated ODA)

Period evaluated: 2000-2009
Average annual growth rate: +1.2 %
Relative change: +11.2 %
Absolute change: +5.9 percentage points



Source: OECD, Eurostat (online data code: 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 a 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; LDCs are classified by the UN.

Share of untied assistance

Between 2000 and 2009 the percentage of untied EU-15 official development assistance increased considerably, although a decline is visible since 2006

Commentary

While there has been overall progress in untying ODA, wide differences between EU-15 countries remain

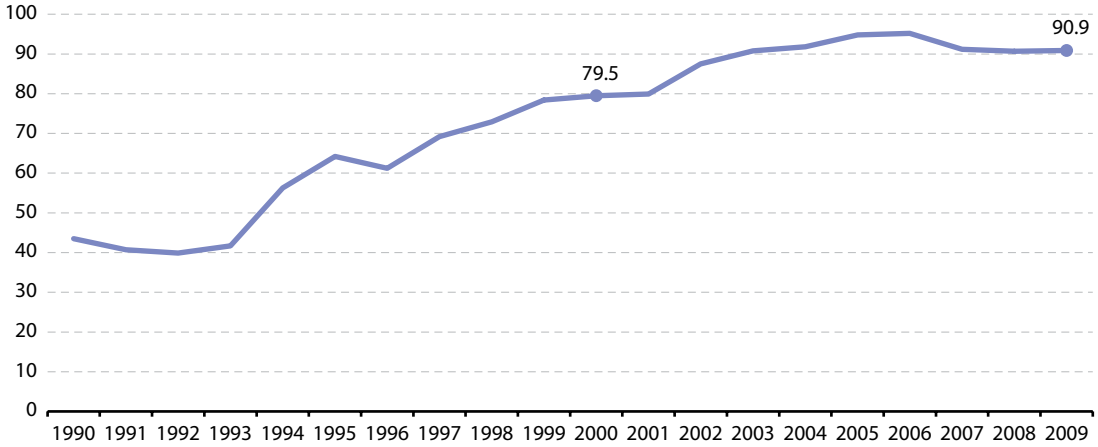
In 2009 more than 90 % of all EU-15 ODA was untied, compared with about 80 % in 2000. Thus, developing countries could use more than 90 % of the ODA they received to freely procure services and goods in all countries, giving them more freedom in their economic choices than when the aid would have been tied.

The share of untied ODA increased by an average annual rate of 1.5 % between 2000 and 2009. However, the share of untied EU-15 ODA had already been more than 95 % in 2006 and has decreased since then. The longer-term trend is nevertheless quite positive: in the early 1990s the share of untied EU-15 ODA had still been below 50 %.

There were marked differences between the rates of untied ODA in different Member States of the EU-15 in 2009. While five countries had untied their ODA entirely, the share was below 60 % for four others.

Figure 9.12: Untied official development assistance, EU-15
(% of total ODA)

Period evaluated: 2000-2009
Average annual growth rate: +1.5 %
Relative change: +14.3 %
Absolute change: +11.4 percentage points



Source: OECD, Eurostat (online data code: tsdgp340)

Indicator relevance

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 reiterated in the Monterrey Consensus on Financing for Development and the Paris Declaration on Aid Effectiveness.

Definition

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 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 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.

Assistance for social infrastructure and services

Assistance from the EU-15 dedicated to social infrastructure and services substantially increased between 2000 and 2009

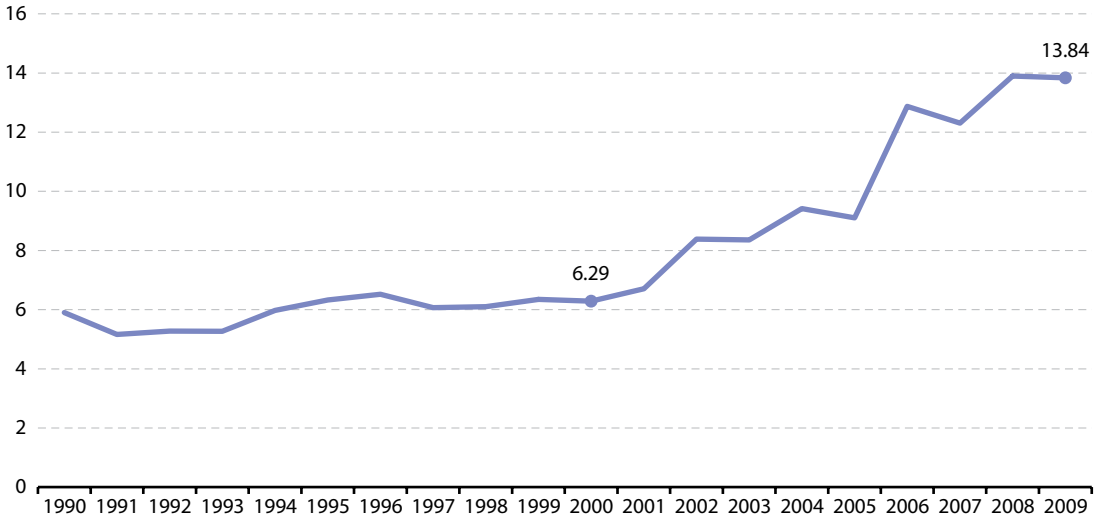
Commentary

Assistance for social infrastructure and services has more than doubled since 2000

Assistance for social infrastructure and services has been increasing since 2000, rising from EUR 6 289 million in 2000 to EUR 13 835 million in 2009, at an annual growth rate of 9.2 %. Although assistance did not increase in every single year, ODA for social infrastructure and services grew more than ten times faster than in the decade between 1990 and 2000, when the annual growth rate had been 0.6 %. This is in line with a general international trend of dedicating more ODA to these purposes.

Figure 9.13: Bilateral ODA dedicated to social infrastructure and services, EU-15 (EUR 1 000 million)

Period evaluated: 2000-2009
Average annual growth rate: +9.2 %
Relative change: +120.0 %
Absolute change: +EUR 7 546 million



Source: OECD, Eurostat (online data code: 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 for an assessment as to 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 EU Sustainable Development Strategy explicitly mentions the improvement of social standards as desirable.

Definition

The indicator is defined as official bilateral commitments 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 relief decreased between 2000 and 2009. However, it developed inconstantly over the last decade

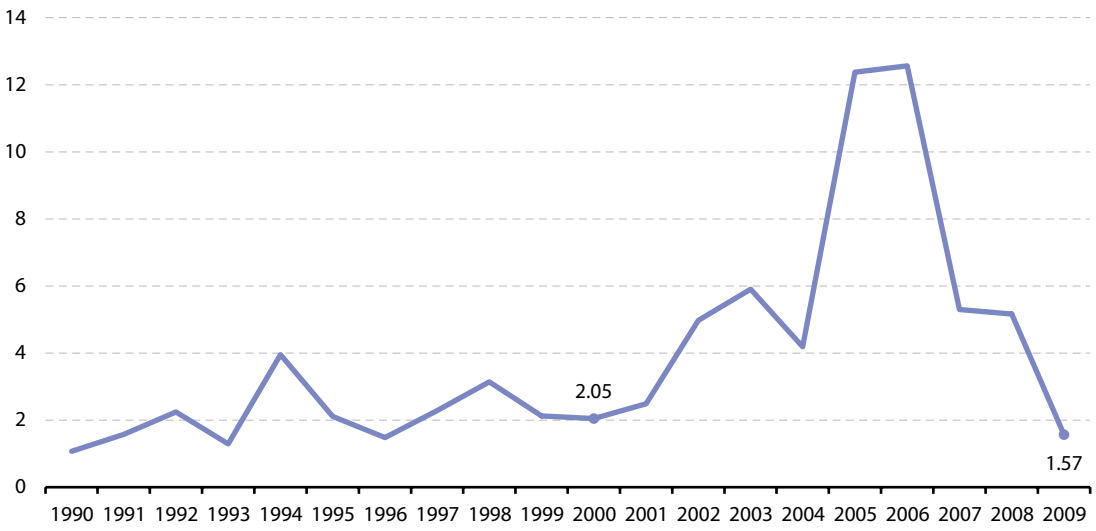
Commentary

Actions related to debt have sharply declined since 2006

Debt relief declined from EUR 2 046 million in 2000 to EUR 1 568 million in 2009, declining by 2.9 % on average each year. During the previous decade from 1990 to 2000, actions related to debt developed more consistently, increasing 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 on debt cancellation in 2005 and 2006 were exceptionally high as a significant share of outstanding developing country debt was cancelled. However, the following decrease – which started before the financial crisis – led to a decline below the values of 2000.

Figure 9.14: Bilateral ODA dedicated to debt, EU-15
(EUR 1 000 million)



Period evaluated: 2000-2009
Average annual growth rate: -2.9 %
Relative change: -23.4 %
Absolute change: -EUR 478 million

Source: OECD, Eurostat (online data code: tsdgp350)

Indicator relevance

The indicator describes the fulfilment of ODA commitments. It provides information on ODA in different aid categories. These 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 EU Sustainable Development Strategy recognises debt reduction as one of the ways to increase the quality and effectiveness of aid.

Donors have now almost fully implemented the Heavily Indebted Poor Countries initiative and the related Multilateral Debt Relief Initiative, launched by the G8 in 2005. Therefore the debt relief operations are naturally diminishing and this indicator is now regarded as contextual, providing background information helpful to an understanding of the topic, but without being evaluated. Debt distress is nevertheless a risk for many poor and middle income developing countries

Definition

The indicator is defined as official development assistance dedicated to debt relief. It is calculated at current prices. It covers aid from EU countries to the countries mentioned in the DAC list.

CO_2 emissions per capita

Carbon dioxide (CO_2) emissions per capita in the EU have dropped slightly since 2000

Commentary

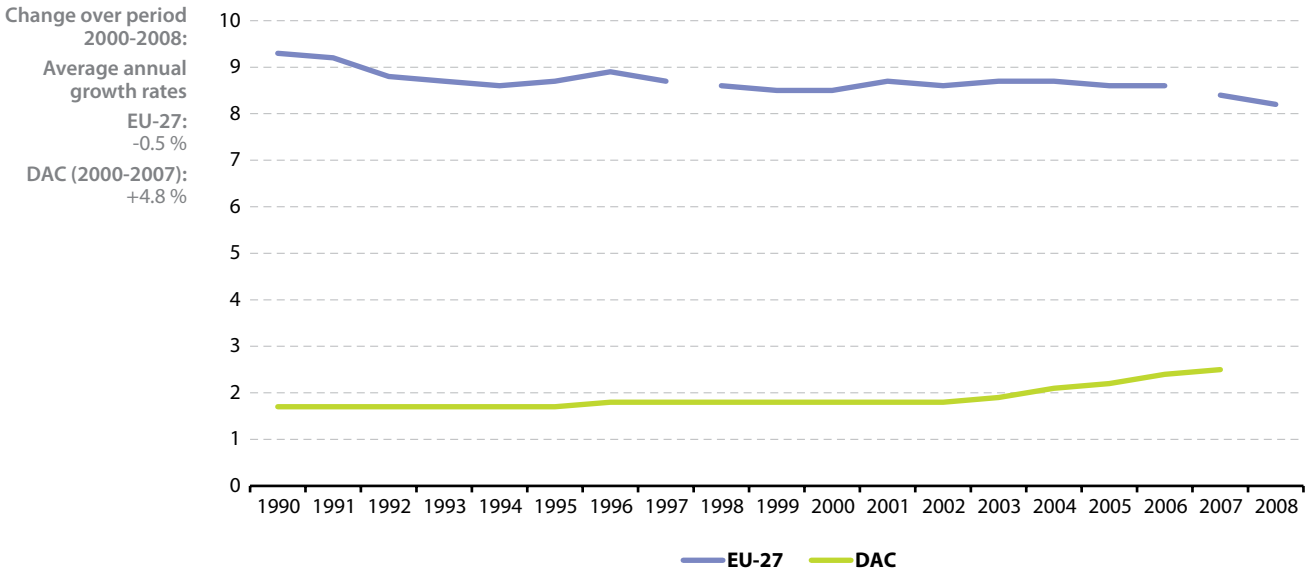
The gap in per capita CO_2 emissions between the EU and developing countries is narrowing due to rapid emissions growth in developing countries

In 2007 emissions in the EU were 3.4 times higher than in developing countries. In 2000 they had been 4.7 times higher. The gap between the two groups of countries has narrowed since 2004: emissions have grown in developing countries, while they have decreased in the EU.

During the 1990s CO_2 emissions per capita in the EU decreased on average by 1.0 % per year, from 9.4 tonnes in 1990 to 8.5 tonnes in 2000. Emissions have remained relatively stable during the 2000s, dropping only slightly to 8.2 tonnes in 2008.

Between 2000 and 2007 CO_2 emissions per capita in developing countries increased from 1.8 tonnes to 2.5 tonnes. This represents a total increase of 38.9 % in this period. In comparison, the increase had been 5.9 % during the previous decade. The increase in per capita CO_2 emissions can be mostly attributed to the fast economic growth of major developing countries, namely China, Brazil and India. EU emissions per capita were still about 7 times higher than in India and 60 % higher than in China in 2008.

Figure 9.15: CO_2 emissions per capita in the EU and in developing countries
(tonnes per inhabitant)



NB: Data for DAC countries are estimates; EU-27 data for 2008 are provisional; break in series in 1998 and 2007.

Source: European Environmental Agency (EEA), International Energy Agency (IEA), Eurostat (online data code: tsdgp410)

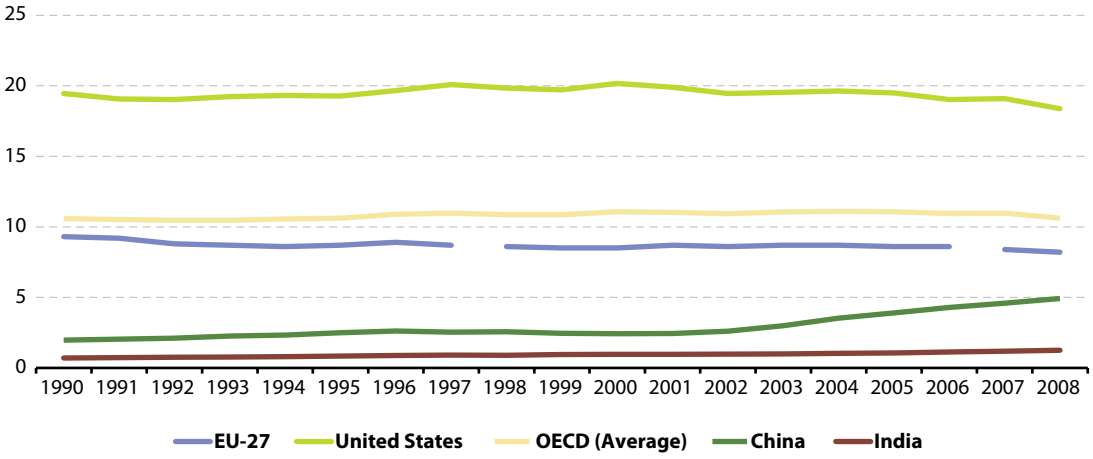
The gap in per capita CO_2 emissions between industrialised countries and emerging economies is narrowing while the differences in absolute terms remain high

An international comparison shows that the EU is below the OECD average concerning the CO_2 emissions per capita. Furthermore, it shows that CO_2 emissions per capita have also decreased in other industrialised countries like the United States or OECD-countries. However, the period evaluated here (2000-2008) in general reflects a quite positive trend in the CO_2 emissions per capita in industrialised countries. In addition to a generally declining trend, the economic crisis led to economic stagnation which translated into less CO_2 emissions per capita ([15]). In contrast, the CO_2 emissions per capita increased in both China and India. The increase in China was particularly substantial with an annual growth rate of 9.1 % between 2000 and 2008.

([15]) See the indicator 'greenhouse gas emissions' in the 'climate change and energy' chapter.

At the same time, although the emissions tend to decrease in industrialised countries and increase in emerging economies, the CO_2 emissions per capita of the United States were still 3.7 times higher than those of China and almost 15 times higher than those of India.

Figure 9.16: CO_2 emissions per capita in the EU, United States, OECD, China and India (tonnes per inhabitant)



Change over period 2000-2008:
Average annual growth rates
United States: -1.2 %
OECD: 0.5 %
EU: 0.5 %
China: +9.2 %
India: +3.3 %

NB: EU-27 data for 2008 are provisional; break in series in 1998 and 2007.

Source: European Environmental Agency (EEA), International Energy Agency (IEA), Eurostat (online data code: tsdgp410)

Indicator relevance

This is a contextual indicator, providing background information helpful to an understanding of the topic. One of the objectives of the EU Sustainable Development Strategy is to 'contribute to improving international environmental governance […] and to strengthening multilateral environmental agreements'. For mitigating climate change the reduction of the emission of greenhouse gases, notably CO_2, is essential. CO_2 emissions per capita is thus one of the indicators for monitoring the achievements towards the Millennium Development Goal 7 (ensure environmental sustainability).

Definition

The indicator compares the level of CO_2 emissions per capita 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_2 emission data are available.

Assistance for water supply and sanitation

EU-15 development assistance dedicated to water supply and sanitation substantially increased from 2000 to 2009, rising above 2 100 million in 2009

Commentary

Assistance for water supply and sanitation has more than doubled since 2000

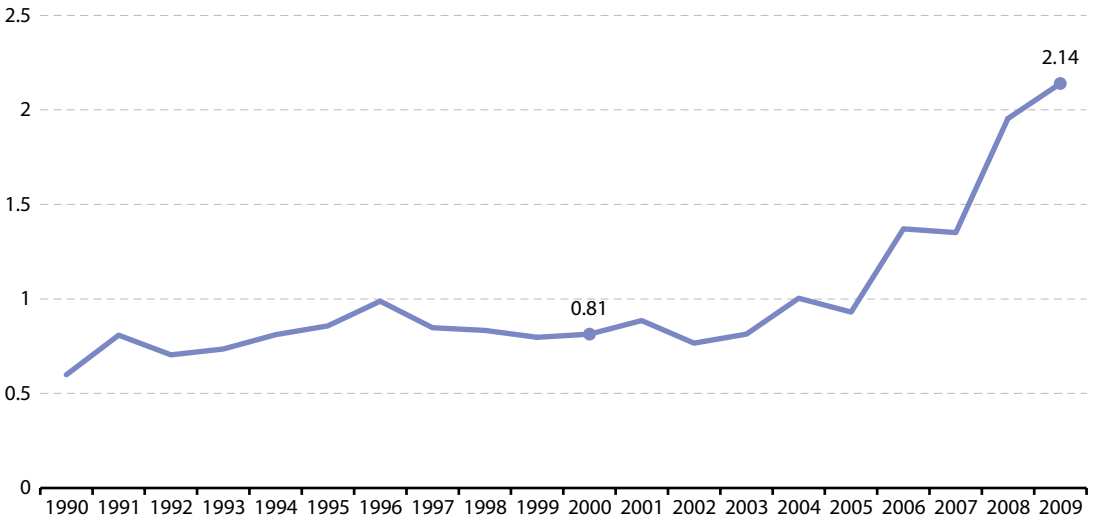
Between 2000 and 2009 EU bilateral ODA dedicated to water resources policy, water legislation and management, water supply, use, protection and sanitation increased by 11.3 % per year on average, totalling EUR 2 140 million in 2009.

This is a favourable development in the context of the policy laid out in the EU Water Initiative (EUWI) which aims not only 'to increase the political commitment to reach internationally agreed targets on water supply and sanitation' but also 'to increase funding to the water sector through its activities' ([16]). The growth rate from 2000 to 2009 was more than three times the growth rate between 1990 and 2000, when assistance for water supply and sanitation increased by an annual average rate of 3.1 %. The amounts spent in 2008 and 2009 were exceptionally high. However, its share in total ODA is still comparatively low.

The United Nations Millennium Development Goals (MDGs), which include the objective of halving the proportion of the population without sustainable access to safe drinking water and basic sanitation by 2015, have likely been a factor behind the growth rates of ODA dedicated to water supply and sanitation.

Figure 9.17: Bilateral ODA dedicated to water supply and sanitation, EU-15
(EUR 1 000 million)

Period evaluated: 2000-2009
Average annual growth rate: +11.3 %
Relative change: +162.8 %
Absolute change: +EUR 1 326 million



Source: OECD, Eurostat (online data code: tsdgp350)

Indicator relevance

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 EU Water for Life Initiative which was launched by the EU Water Initiative. The EUWI itself 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

([16]) EU Water Initiative, *EUWI 2010 Annual report*, pp. 4 and 9, respectively.

achievement of the MDGs ([17]) and WSSD targets for drinking water and sanitation ([18]), 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.

Definition

The indicator is defined as official bilateral commitments 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.

([17]) United Nations, *Resolutions adopted by the General Assembly 55/2. United Nations Millennium Development Goals*, 18. September 2000.
([18]) United Nations, *Johannesburg Summit 2002, Summit Agreement on New Goal to Expand Access to Sanitation*, World Summit on Sustainable Development, Johannesburg, 26 August – 4 September 2002.

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 came from the OECD DAC database. DAC statistics are collected annually from the members of the OECD Development Assistance Committee (DAC). They include figures for 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 the Czech Republic, Hungary, Poland, and the Slovak Republic 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 was used for reporting on 2005, 2006. The DAC List approved in September 2008 was used for reporting in 2009 on 2008 flows. The DAC List approved in August 2009 applies in 2010 and 2011 for reporting on 2009 and 2010 flows respectively. The next review of the DAC List will take place in 2011.Countries are clustered by income groups: least-developed countries (LDCs), other low-income countries (OLICs), low-middle-income countries (LMICs), upper-middle-income countries (UMICs); The breakdown from the current list for reporting 2010 flows is applied to all data retroactively, regardless of the year of the flow, in order to ensure comparability over time with reference to the latest breakdown. for classification of countries and for historical DAC lists see: 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).In this report net disbursement figures are used

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They include transactions with national and international non-governmental 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. '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: relates essentially to efforts to develop the human 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 trade indicators come from the 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).

In order to guarantee comparability over time, the DAC list of ODA recipients effective from 2009 has been used for the entire dataset.

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. Subsidies in 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_2 emissions per capita

For EU Member States, this indicator is compiled using the data on CO_2 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_2 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. Per capita emissions are

calculated using IEA population data. IEA data were extracted from the following IEA 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.


70
30
50

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' (policy guiding principle of the EU Sustainable Development Strategy concerning 'policy coherence and governance')

Overview of main changes

The trends observed in the good governance theme since 2000 have been mixed. There have been favourable trends as regards infringement cases as well as e-government availability and usage. In addition, the transposition of EU law has been above the target rate. There have, however, been negative trends with regard to voter turnout in national parliamentary elections, which is generally falling. Moreover, trends in the ratio of environmental to labour taxes show that 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)* (1)

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

(*) From 2007.
(**) From 2005.

(1) An explanation of the evaluation method and the meaning of the weather symbols is given in the Introduction.

Policy coherence and effectiveness

European Parliament is most trusted among main EU institutions

In 2009 half of EU 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.

Decrease in new infringement cases and transposition of EU law above target level

Between 2007 and 2009 the number of new infringement cases in the EU decreased considerably from 212 to 142. This was mainly due to reductions in two policy areas: Internal market, and Justice and home affairs. There were, however, substantial differences between the different policy sectors policy sectors.

In 2001 the European Council set a target of a 98.5 % transposition rate of EU law by national authorities. Although in 2009 the overall rate was slightly above the 98.5 % target, several policy sectors showed lower transposition rates.

Openness and participation

Slight decrease in voter turnout in national elections

Voter turnout in national parliamentary elections decreased slightly in the EU as a whole between 2000 and 2010. Generally, there has been stronger participation in national elections than in EU parliamentary elections.

E-government availability and usage are increasing

E-government availability of basic public services is extensive in the EU and has been steadily increasing since 2002 and its usage by individual citizens has increased between 2005 and 2010. There exist, however, considerable differences between Member States.

Economic instruments

The ratio of environmental to labour taxes has decreased

There was a shift from environmental to labour taxes in the EU between 2000 and 2009. This is inconsistent with EU Sustainable Development Strategy objective to shift taxation from labour to resource and energy consumption and/or pollution.

Good governance and sustainable development

Sustainable development strategies include governance provisions

The objective of sustainable development poses, on the international as well as the national level, significant challenges for government institutions which were originally established to address sectoral concerns. The challenges associated with sustainable development are interdependent and integrated and thus require 'comprehensive approaches and popular participation' ([2]). In order to address these challenges, international and national sustainable development strategies have been developed since the mid-1990s. They aim to describe a fully integrated process of strategic decision-making for sustainable development, including objectives and governing mechanisms ([3]). The EU Sustainable Development Strategy, as the EU's main policy document for strategic and integrated decision-making, contains principles for governance that reflect governance processes and that aim to more effectively steer the processes of sustainable development policy-making in Europe (see Box 10.1).

Good governance is a normative usage of the governance concept

The link between governance and sustainable development is thus fundamental and was already addressed in the Brundtland Report of 1987. Generally, governance refers to the steering of societal processes by governing procedures and institutions in a democratic manner ([4]). 'Good governance' is a specifically normative usage that prescribes certain steering procedures and institutions – based on principles, values and norms, i.e. participation, transparency, rule of law, etc. – that should be adopted to achieve preferred outcomes. The origin of the concept of good governance as used here is associated with international organisations such as the World Bank and the OECD in the context of development policy. The EU has addressed good governance in its White Paper on European Governance (see Box 10.2), defining five principles for application and designating the concept a normative standard for the EU's policy processes.

Sustainable development can be understood as governance reform agenda

Governance mechanisms are crucial for achieving sustainable development. The first document to frame sustainable development in terms of the reform of governance was Agenda 21, the action plan adopted at the UN Conference on Environment and Development which took place in Rio in 1992 ([5]). The governance aspects of this action plan were reiterated and built on at the UN World Summit in Johannesburg 2002 (Rio +10). The World Summit Report pointed out that 'good governance is essential for sustainable development' ([6]). The Report also puts forward several objectives for reforming governing institutions for sustainable development. These include the integration of the economic, social and environmental dimensions of policy-making in a balanced manner; strengthening coherence, coordination and monitoring; enhancing participation and effective involvement of civil society and other relevant stakeholders; and strengthening educational, scientific and informational initiatives for sustainable development at all political levels. It is also worth noting in this regard the special wording of Article 11 of the Treaty on the Functioning of the European Union: 'Environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, in particular with a view to promoting sustainable development' ([7]).

([2]) Report of the World Commission on Environment and Development to the General Assembly of the United Nations, *Our Common Future*,1987, p.9.
([3]) Meadowcroft, J., 'National Sustainable Development Strategies: Features, Challenges and Reflexivity', *European Environment*, 17, 2007, pp. 152-163.
([4]) Lafferty, W.M., 'Introduction: form and function in governance for sustainable development', in Lafferty W.M. (ed) Governance for Sustainable Development: The Challenge of Adapting Form to Function, Edward Elgar, 2004, pp. 1-31.
([5]) United Nations, *Agenda 21: The United Nations Programme of Action from Rio*, New York, United Nations, 1992.
([6]) United Nations, *Report of the World Summit on Sustainable Development,* New York, United Nations, 2002.
([7]) European Union, 'Consolidated Version of the Treaty on the Functioning of European Union', *Official Journal of the European Union,* C 115/47, 2008.

Box 10.1: Principles and objectives related to good governance in the EU Sustainable Development Strategy (EU SDS)

Good governance issues are addressed in various sections of the EU SDS ([8]), namely in the sections on policy guiding principles, better policy-making, and financing and economic instruments.

Policy guiding principles (selection which is relevant to this chapter):

- *Open and democratic society:* guaranteeing citizens' rights of access to information and ensured access to justice; developing adequate consultation and participatory channels for all interested parties and associations.
- *Involvement of citizens:* enhancing the participation of citizens in decision-making; promoting education and public awareness of sustainable development; informing citizens about their impact on the environment and their options for making more sustainable choices.
- *Involvement of businesses and social partners:* enhancing the social dialogue, corporate social responsibility and private-public partnerships to foster cooperation and common responsibilities to achieve sustainable consumption and production.
- *Policy coherence and governance:* promoting coherence between all European Union policies and coherence between national, regional and local actions in order to enhance their contribution to sustainable development.
- *Policy integration:* promoting the integration of economic, social and environmental policies so that they are coherent and mutually reinforce each other by making full use of instruments for better regulation, such as balanced impact assessment and stakeholder consultations.
- *Make polluters pay:* ensuring 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.

Better policy-making:

- The EU SDS sets out an approach to better policy-making 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), *assessing in a balanced way the social, environmental and economic dimensions of sustainable development*.
- Other tools for better policy-making include *ex-post assessment of policy impacts* and *public and stakeholder participation*.

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*.

([8]) European Council, *Review of the EU Sustainable Development Strategy (EU SDS) - Renewed Strategy*, 2006, 10117/06.

Box 10.2: White Paper on European Governance – Proposals for change and principles ofgood governance

The 2001 White Paper on European Governance ([9]) includes 'proposals for change' aimed to renew the Community method ([10]) 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 a global level.
- *Refocused policies and institutions:* the EU should identify more clearly its long-term objectives (with the overall objective 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:

- *Openness:* EU institutions should work more openly.
- *Participation:* the quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain.
- *Accountability:* roles in the legislative and executive processes must be clearly defined.
- *Effectiveness:* policies must be effective and timely; delivering what is needed on the basis of clear objectives.
- *Coherence:* policies and actions must be coherent and easily understood.

Further reading on good governance

European Commission, *European Governance – A White Paper*, COM(2001) 428

Commission report, *Aarhus Convention Implementation Report: European Community*, SEC(2008) 556

Commission communication, *The European eGovernment Action Plan 2011-2015: Harnessing ICT to promote smart, sustainable & innovative Government*, COM(2010) 743

Commission communication, *A Digital Agenda for Europe*, COM(2010) 245

Commission staff working document, *Europe's Digital Competitiveness Report*, vol. 1, SEC(2010) 627

European Commission, *Taxation trends in the European Union: Data for the EU Member States, Iceland and Norway, 2011 edition*, Luxembourg, Office for Official Publications of the European Union, 2011

([9]) European Commission, *European Governance – A White Paper*, COM(2001) 428.
([10]) The 'Community method' is the EU's general method of decision-making, in which the Commission makes a proposal to the Council and Parliament who then debate it, propose amendments and eventually adopt it as EU law.

Citizens' confidence in EU institutions

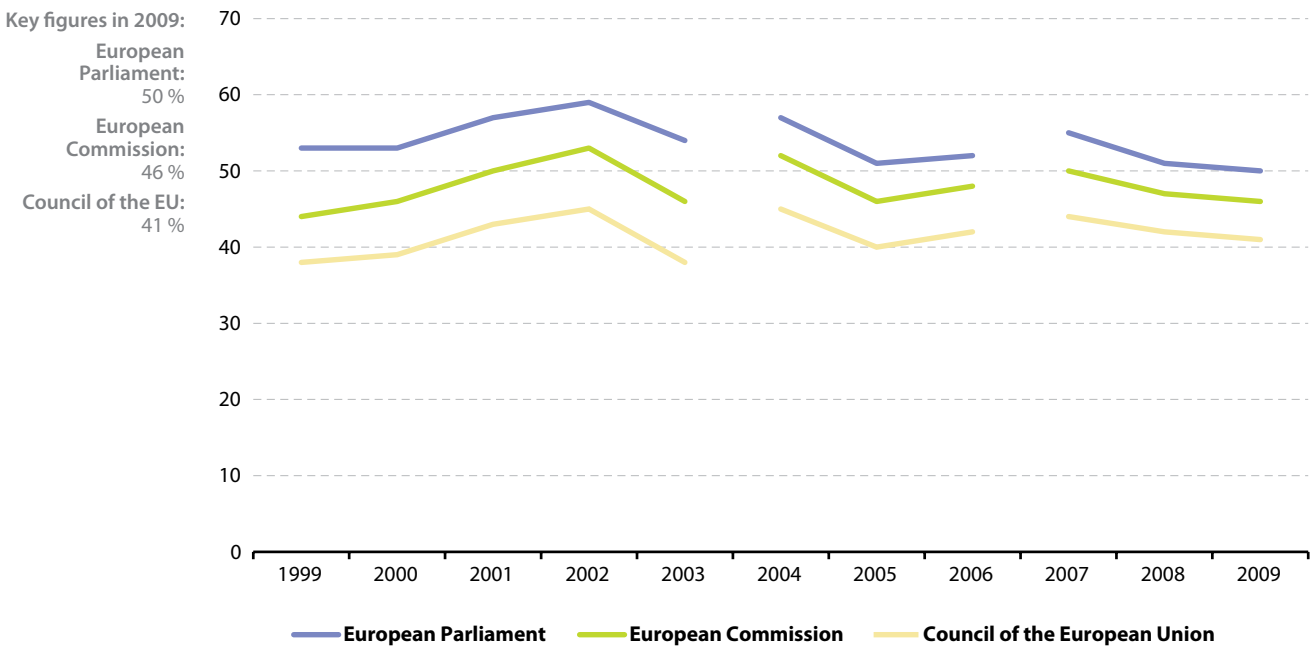
The European Parliament continues to be the most trusted among the main EU institutions, followed by the European Commission and the Council of the European Union. Trust levels for all three institutions in the EU have, however, dropped in 2009 compared to the levels in 2007

Commentary

In 2009 half of the EU citizens who were interviewed said that they trusted the European Parliament, making it the most trusted of the three main EU institutions. Fewer citizens said that they trusted the European Commission (46 %) and the Council of the EU (41 %). Since 2007, however, trust levels for all three institutions have decreased in the EU as a whole. Trust in the European Parliament has declined by 9.1 %, in the Commission by 8 %, and in the Council by 6.8 %.

Confidence in the three main EU institutions has developed in parallel since 1999, with the level of trust in each institution remaining approximately the same over the entire period ([11]).

Figure 10.1: Level of citizens' confidence in EU institutions
(%)



NB: Data represent EU-15 prior to 2003, EU-25 from 2004 to 2006, and EU-27 from 2007 to 2009.

Source: European Commission, Eurobarometer, Eurostat (online data code: tsdgo510)

Indicator relevance

Confidence in political institutions is an important general condition for effective democratic governance. The indicator is related to several of the policy guiding principles highlighted in the EU Sustainable Development Strategy (e.g. the involvement of stakeholders in an open and democratic society). Confidence in EU institutions is also an important supporting factor for implementing the good governance principles outlined in the White Paper on European Governance.

This is a contextual indicator, providing background information helpful to an understanding of the topic.

([11]) European Commission, *Eurobarometer 72*, Brussels, 2010.

Definition

The level of citizens' confidence in the main EU institutions is measured by expressions of institutional 'trust' among citizens of the EU Member States. Citizens questioned expressed their level of confidence in the main institutions by choosing between three alternatives: 'tend to trust'; 'tend not to trust'; and 'don't know'. As 'trust' is not further specified, there is clearly room for individual interpretation by the interviewed citizens.

Infringement cases

The number of new infringement cases in the EU decreased considerably between 2007 and 2009

Commentary

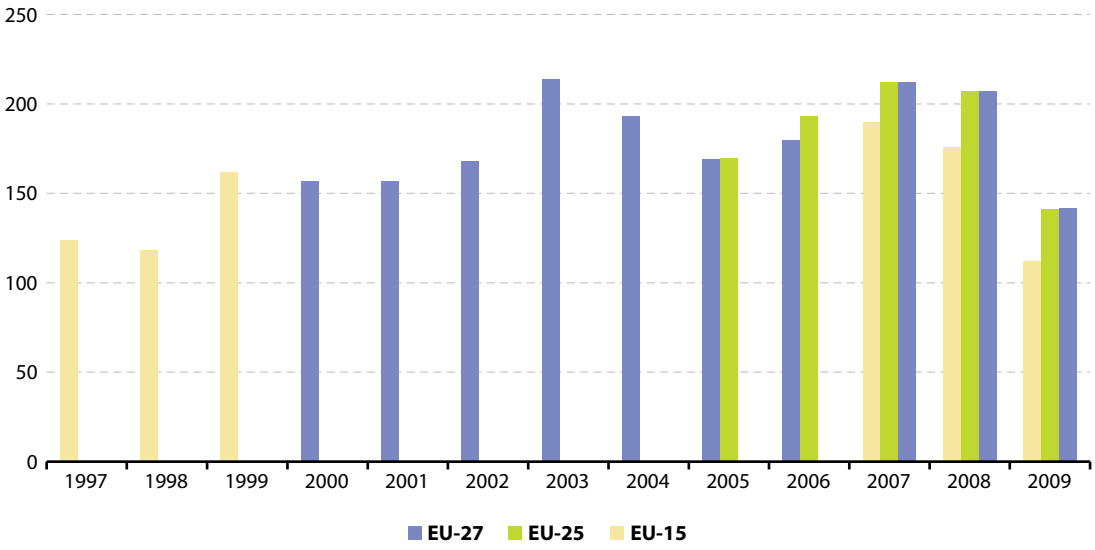
More than 50 % of new infringement cases in 2009 concerned Environment, Health and Consumer Protection and Internal Market

There was a considerable decrease of new infringement cases in the EU between 2007 and 2009. Whereas cases decreased only slightly between 2007 and 2008 (from 212 to 207), the drop between 2008 and 2009 was substantial (from 207 to 142). This was mainly due to a reduction of new cases in two policy areas: Internal Market, which had an exceptionally high number of cases in 2008 (71 cases, compared to about 30 cases in 2007 and 2009), and Justice and Home Affairs, which showed a notably high number in 2007 (77 cases, compared to 38 in 2008 and 14 in 2009).

There are also considerable differences among the individual policy sectors. Environment, Health and Consumer protection (31.5 %) and Internal market (19.6 %) still made up more than half of all new infringement cases in 2009. Between 2008 and 2009 new infringement cases decreased in seven policy sectors, increased in two sectors and remained the same in another two sectors.

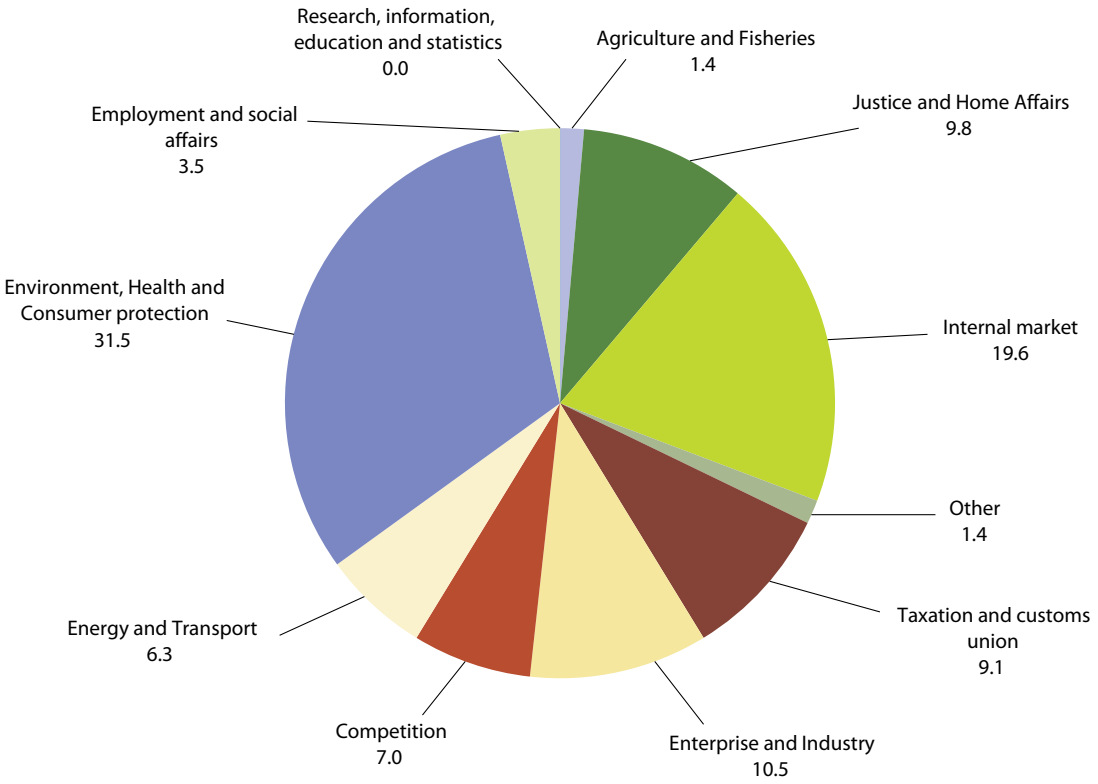
Figure 10.2: New infringement cases
(number)

Period evaluated: 2007-2009 (EU-27)
Average annual growth rate: -18.2 %
Relative change: -33 % decline
Absolute change: -70 cases



Source: Court of Justice of the European Union, Eurostat (online data code: tsdgo210)

Figure 10.3: New infringement cases, by policy area, EU-27, 2009
(%)



Key figures in 2009:
Highest: Environment, health and consumer protection: 31.5 %
Lowest: Research, information, education and statistics: 0 %

Source: Court of Justice of the European Union.

Indicator relevance

The indicator provides a measure of the enactment of EU law at the national level and gives some insight into areas that cause difficulties to Member States. As one of the policy guiding principles of the EU Sustainable Development Strategy is to promote coherence at all levels of political action (i.e. policy coherence and governance), the indicator illustrates one aspect of policy coherence between the EU and the Member States.

Definition

The 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 EU law

In each year from 2007 to 2009 the enactment of EU law into national law was above the target rate of 98.5 %

Commentary

Transposition of EU law was slightly above target in 2009

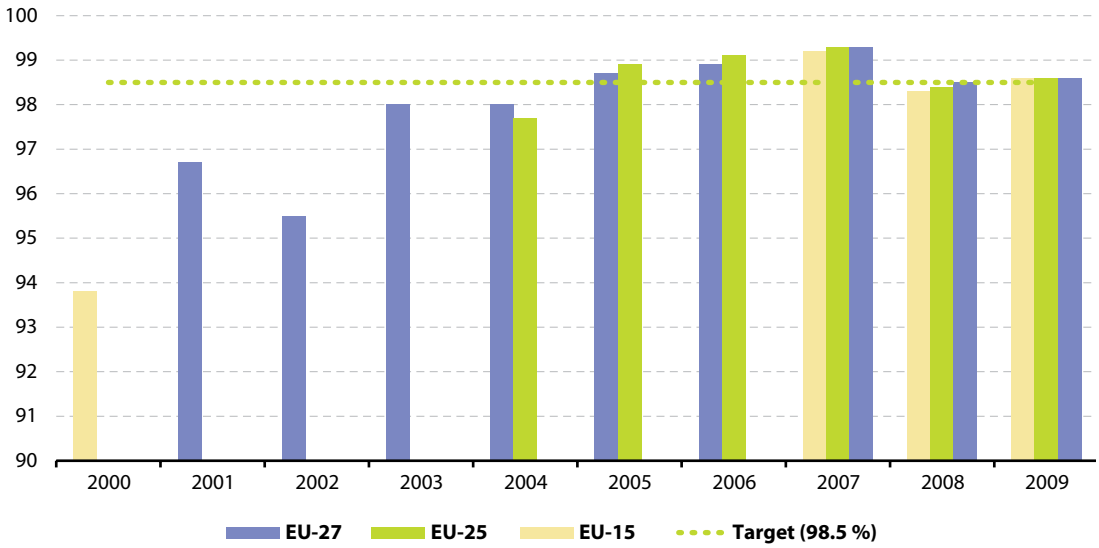
The indicator measures the percentage of EU directives that have been adequately enacted into national law. Almost all EU directives are connected to the Single Market. In 2001 the European Council set the target of 98.5 % rate of transposition of EU directives relating to the Single Market by national authorities. In 2009 the rate of transposition for all EU directives was slightly above target (at 98.6 %), but below the transposition level of 99.3 % seen in 2007.

Four out of ten Single Market policy sectors were above or on target

All policy sectors in the Single Market in 2009 had reached transposition rates above 97 %, with the notable exception of 'competition' (75.3 %). Only four out of ten policy sectors were, however, either above or at the target level of 98.5 %.

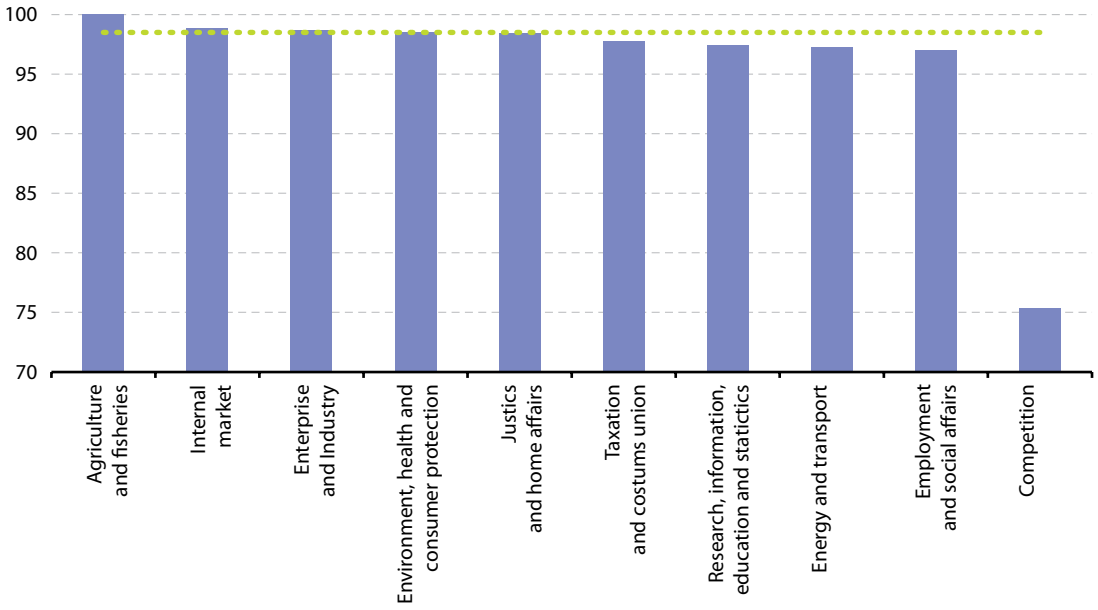
Figure 10.4: Transposition of EU law
(%)

Period evaluated: 2007-2009 (EU-27)
EU target rate: 98.5 %
EU-27 in 2009: 98.6 %



Source: European Commission Services, Eurostat (online data code: tsdgo220)

Figure 10.5: Transposition of EU Single Market law, by policy area, EU-27, 2009
(%)



Key figures in 2009:

Sectors above or on target:
Agriculture and fisheries: 100 %;
Internal market: 98.8 %;
Enterprise and Industry: 98.7 %;
Environment, health and consumer protection: 98.5 %

Sector furthest below target:
Competition: 75.3 %

Source: European Commission Services, Eurostat (online data code: 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 governance principles included in the EU Sustainable Development Strategy and a principle outlined in the White Paper on governance. The European Council, in 2001, set the target of a 98.5 % rate of transposition of Single Market law by national authorities.

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 of the Single Market. It is calculated as the percentage of the total number of applicable directives at the reference date for which measures of enactment has been notified to the Commission.

Voter turnout

Participation in national parliamentary elections in the EU decreased slightly between 2000 and 2010

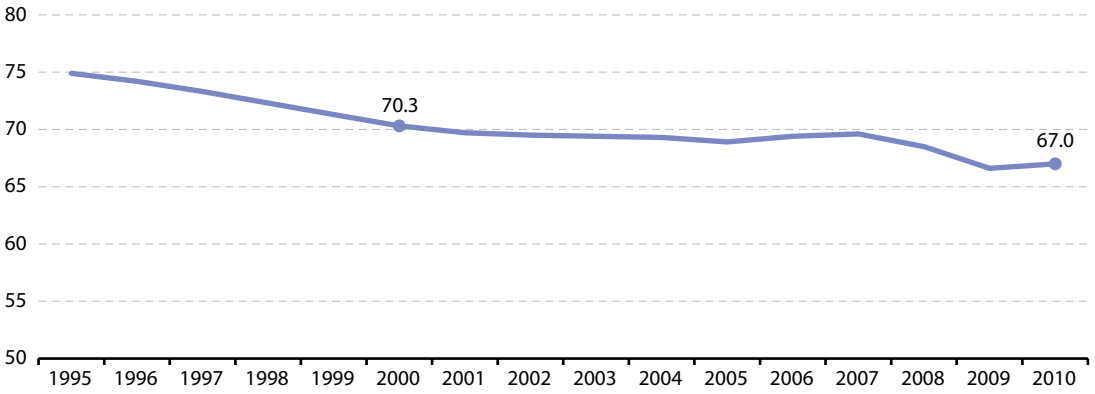
Commentary

Voter turnout in national parliamentary elections decreased

Between 2000 and 2010 voter turnout in the EU Member States in national parliamentary elections decreased slightly. Voter turnout in the individual Member States varies from 100 % to 39.2 %, mainly due to different national traditions and electoral systems, but has remained above 50 % in all but two countries.

Figure 10.6: Voter turnout in national parliamentary elections, EU-27
(%)

Period evaluated: 2000-2010
Average annual growth rate: -0.5 %
Relative change: -4.7 %
Absolute change: -3.3 percentage points



NB: Eurostat estimates on the basis of the trends observed in each of the Member States.

Source: Election Guide (CEPPS), Eurostat (online data code: tsdgo310)

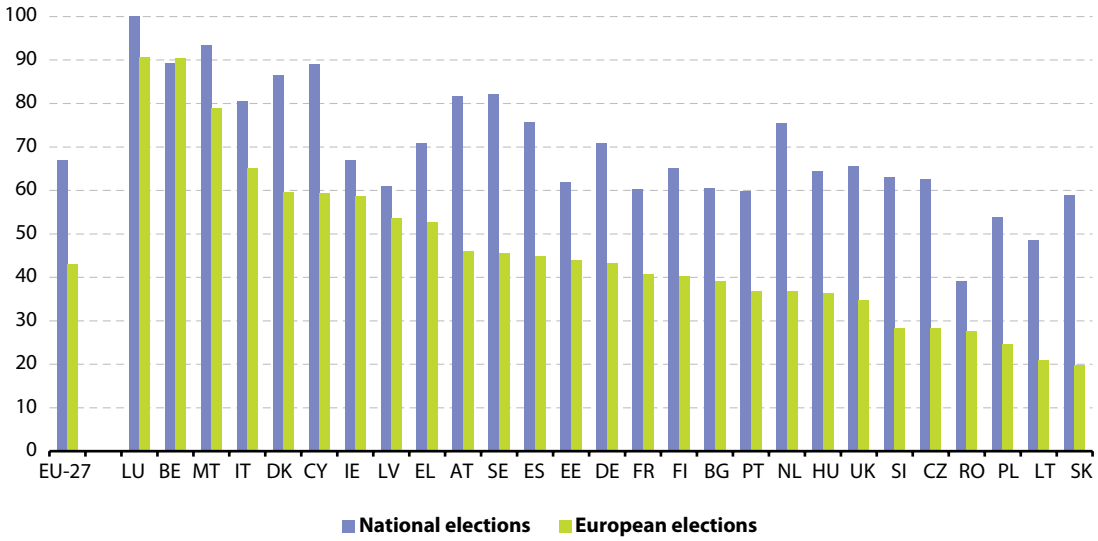
Commentary

Participation in European Parliament elections has been poorer than in national elections

Participation in elections to the European Parliament has been substantially lower than in national elections. In 2009 voter turnout in the European Parliament elections stood at 43 %, somewhat lower than in the previous elections of 2004 (45.5 %) and 1999 (49.5 %). The poorer voting record of the European Parliament elections compared to the national parliaments – more than 20 % difference in 17 countries, with only one country showing the contrary result – may reflect a lack of information on EU matters among EU citizens ([12]) as well as the fact that EU elections may not be perceived by citizens as having a significant impact on national policies and personal interests.

([12]) Farrell, D.M. and Scully, R. *Representing Europe's citizens? Electoral institutions and the failure of parliamentary representation*, Oxford University Press, Oxford, 2007.

Figure 10.7: Voter turnout in national and 2009 European Parliament elections
(%)



Key figures in 2009:

Highest:
Luxembourg: 100 % (national) and 90.8 % (EU)

Lowest:
Romania: 39.2 % (national) and Slovakia: 19.6 % (EU)

EU-27 average:
National: 67 %
EU: 43 %

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 elections were held. For all countries, this year lies between 2006 and 2010.

Source: Election Guide (CEPPS), Eurostat (online data code: tsdgo310)

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 levels. The indicator is related to two policy guiding principles of the EU 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 a percentage of the total population which has the right to vote. The turnout also included those who cast blank or invalid votes. The two indicators are not fully comparable as they refer to different dates of elections and different reference populations.

E-government availability

Between 2007 and 2010 the availability of online public services steadily increased in the EU-27, reaching 84.3 % in 2010

Commentary

In 2010,84.3 % of the EU's public services were available online

Availability of e-government is widespread in the EU and has been steadily increasing, from 58.3 % in 2004 to 84.3 % in 2010.

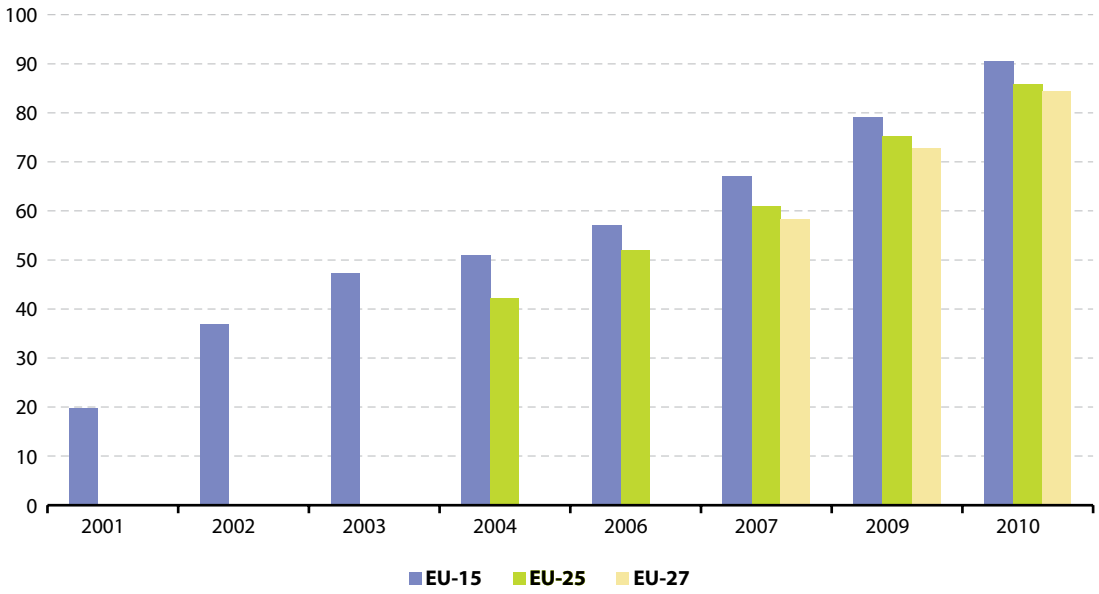
The quantity of online services for citizens and businesses offered varies between Member States. In 2010, six countries, Austria, Ireland, Italy, Malta, Portugal, and Sweden had 100 % of basic public services fully available online. Twelve offered between 75 % and 99 %, eight offered between 50 % and 74 %. Only Greece, offered less than 50 %.

12 Member States offered more than 75 % of basic public services online

The European Commission recently concluded that 'Europe has continued to make progress in the delivery of online public services towards meeting the objectives of the Lisbon Agenda and the i2010 e-Government Action Plan … . However, this increase masks substantial differences between services for businesses and services for citizens: the former have almost reached saturation with 83 % availability while the latter, with 63 % availability, shows a significant shortfall' ([13]). Nevertheless, it should be pointed out that the basic public services applied for assessing progress of e-government in Europe ([14]) are administrative, procedural or informational in nature and do not include forms of direct exchange with policy-makers and/or decision-making mechanisms (e.g. e-voting).

Figure 10.8: E-government online availability
(%)

Period evaluated: 2007-2010
Average annual growth rate: +13.1 %
Share in 2007: 58.3 %
Share in 2010: 84.3 %



NB: There was no data collection in 2005 or 2008.

Source: Eurostat (online data code: tsdgo320)

([13]) Commission staff working document, *Europe's Digital Competitiveness Report*, vol. 1, SEC(2010) 627.
([14]) A basket of 20 public services are applied to assess progress of e-government in Europe. The list of these public services can be found in the methodological notes at the end of this chapter.

Indicator relevance

E-government availability provides an indication of access to more information for citizens and more open system of public administrations. It is therefore connected to the governance principles of the EU Sustainable Development Strategy to guarantee citizens' access to information. In December 2010, the European Commission published the second 'European eGovernment Action Plan' ([15]) (2011-2015) which supports 'the transition from current eGovernment to a new generation of open, flexible and collaborative seamless eGovernment services at local, regional, national and European levels that will empower citizens and businesses'.

Definition

E-government availability shows the percentage of the 20 basic services that are fully available online, that is for which it is possible to carry out full electronic case handling. For example, if, for a given country, 13 of the 20 services are assessed to be 100 % available online, and one service is not relevant (e.g. does not exist), the indicator will be a ratio of 13 to 19 (68.4 %). Measurement is based on a sample of URLs of public websites agreed with the Member States as relevant for each service.

([15]) Commission communication, *The European eGovernment Action Plan 2011-2015: Harnessing ICT to promote smart, sustainable & innovative Government*, COM(2010) 743.

E-government usage

The use of online public services increased significantly in the EU between 2005 and 2010. Overall, about one-third of EU citizens used e-government in 2010

Commentary

E-government usage is on the rise

Usage in 2010 varied between 72 % and 7 % among Member States

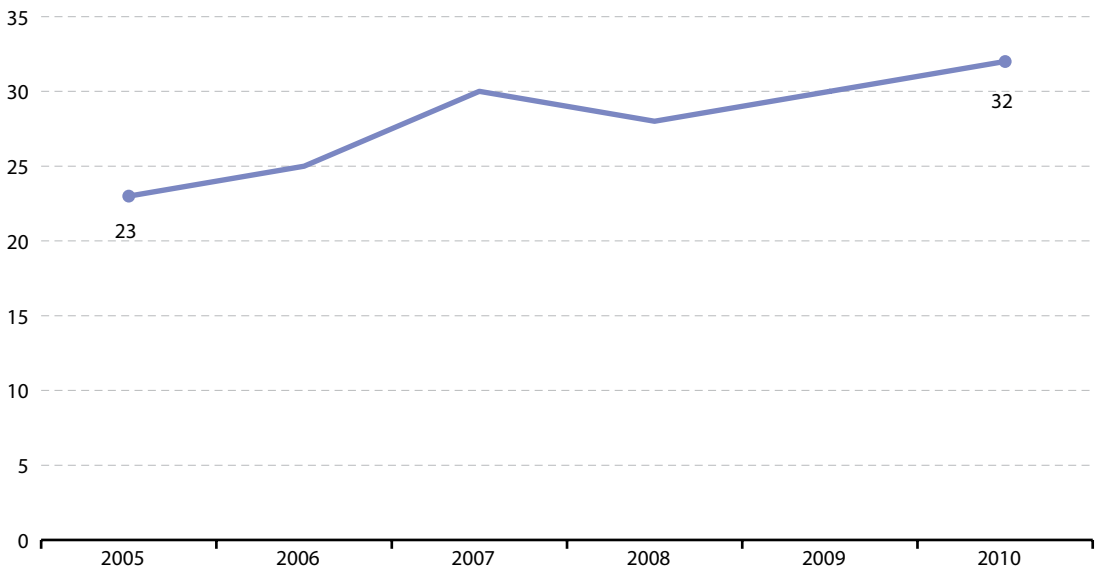
Between 2005 and 2010 the use of the internet for interaction between public authorities and citizens in the EU increased. In 2010 e-government usage was above 50 % in five countries (Denmark, Sweden, Netherlands, Finland and Luxembourg), whereas it varied between 48 % and 7 % in the remaining Member States. The degree of this variation is consistent with the picture presented by the previous indicator, e-government availability (see above). One reason for this difference lies in the varying degrees of internet coverage and general internet use in individual Member States. As stated in a recent Commission report, 'the large disparity in e-government use seems to be driven more by the degree of internet penetration in a country than by the degree of sophistication of its online provision. There is a strong correlation across countries between internet use and the percentage of users that take up e-government services' ([16]).

E-government availability and usage are not directly related

There is, however, no direct connection between the offer of online public services and e-government usage. In 2010 84.3 % of the EU's public services were available online, while e-government usage was only about 30 %. Only some countries such as Sweden, Finland and Denmark have reached high levels of both e-government availability and e-government usage.

Figure 10.9: E-government usage by individuals, EU-27
(%)

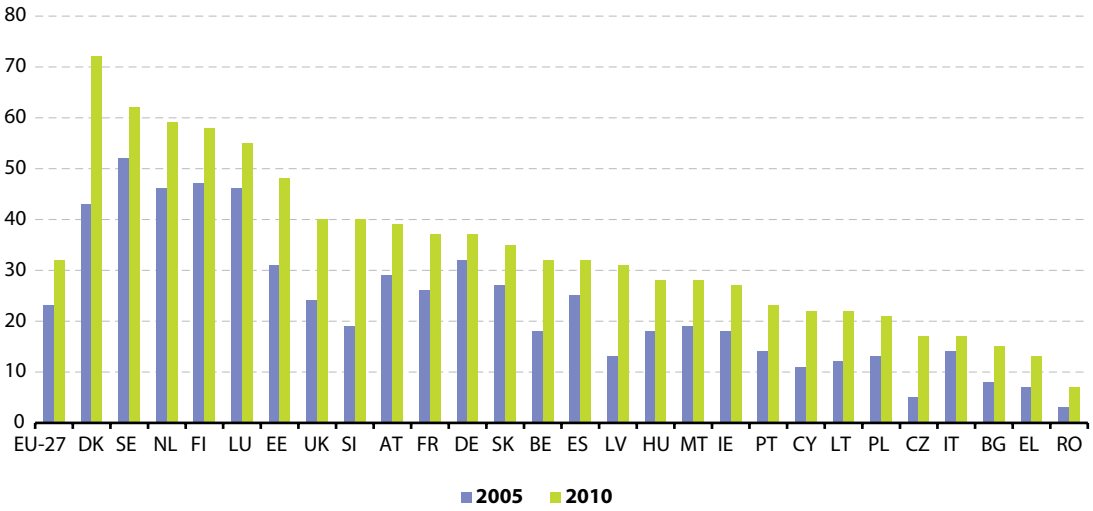
Period evaluated: 2005-2010
Average annual growth rate: +6.8 %
Absolute change: +9 percentage points



Source: Eurostat (online data code: tsdgo330)

([16]) Commission staff working document, *Europe's Digital Competitiveness Report*, vol. 1, SEC(2010) 627.

Figure 10.10: E-government usage by individuals, by country
(%)



Key figures in 2010:
Highest:
Denmark: 72 %
Lowest:
Romania:
7 %
EU-27 average:
32 %

NB: 2006 data for BG, DK, ES, FR, DE and RO used instead of 2005.

Source: Eurostat (online data code: tsdgo330)

Indicator relevance

The indicator measures the use of basic online services by individual users and thus measures how European citizens use the internet when communicating with public authorities. However, it does not provide a concrete indication of more specific 'democratic' usage of the internet (e.g. online discussion forums, electronic voting, etc.). ([17])

The 'Digital Agenda for Europe' is one of the flagship initiatives of the Europe 2020 Strategy ([18]). The main aim is 'to deliver sustainable economic and social benefits from a digital single market based on fast and ultra fast internet and interoperable applications.'

Definition

E-government usage by individuals is measured by the percentage of individuals aged 16 to 74 who claim to have used the internet for interaction with public authorities during three months preceding the survey. 'Interaction' is further specified as having used the Internet for one or more of the following activities: (i) obtaining information from public authorities' websites; (ii) downloading official forms; (iii) sending completed forms.

([17]) Statistics for the new indicators included in the Benchmarking Digital Europe 2011-2015 framework are expected to become available by the end of 2011.
([18]) Commission communication, *A Digital Agenda for Europe*, COM(2010) 245.

Environmental taxes compared to labour taxes

The ratio of environmental to labour taxes decreased in the EU from 2000 to 2009. This trend is counter to the goal of the EU Sustainable Development Strategy to shift taxation from labour into resource and energy consumption and/or pollution

Commentary

The ratio of environmental to labour taxes is shifting away from environmental taxes

The ratio of environmental to labour taxes decreased from 0.13 in 2000 to 0.12 in 2009. This indicates a decline in the share of environmental taxes in total tax revenues compared to labour taxes, in particular since 2004.

The share of environmental taxes in total tax revenues is declining

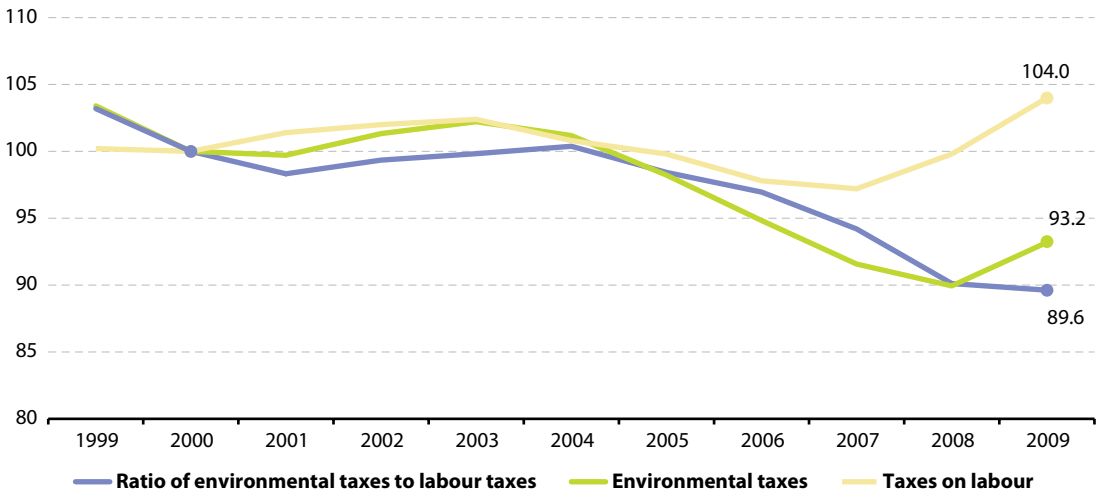
The share of environmental taxes in total tax revenues fluctuated between 2000 and 2009. When looking at the share of environmental taxes in the individual Member States, substantial differences between the Member States are revealed. In 2009 only three, Bulgaria, Denmark and Netherlands, showed a share above 10 % (highest 11.9 %) of total tax revenue. In order to understand the decline of environmental taxes as a share of total tax revenues, it is important to understand that environmental taxes are levied per unit of physical consumption (unit taxes) and are usually fixed in nominal terms. Hence, unlike ad valorem taxes ([19]), their real value in relation to GDP tends to fall unless they are adjusted for inflation or otherwise increased at regular intervals ([20]).

There are large differences between Member States in the level of labour taxes

As with environmental taxes, the share of labour taxes in total revenues fluctuated between 2000 and 2009. The highest share was in 2009 (52.1 %) and the lowest in 2007 (48.7 %). Generally, the taxation on labour is much higher in the EU than in other major economies ([21]). Nevertheless, there are large differences in the level of taxation among the Member States (ranging from 27.7 % to 60.5 %).

Figure 10.11: Shares of environmental and labour taxes in total tax revenues, EU-27 (index 2000 = 100)

Period evaluated: 2000-2009
Average annual growth rates
Ratio of environmental to labour taxes: -1.2 %
Environmental taxes: -0.8 %
Taxes on labour: +0.4 %



Source: Eurostat (online data code: tsdgo410)

([19]) Ad valorem taxes are taxes based on the assessed value of real estate or personal property.
([20]) Eurostat, *Taxation trends in the European Union: Data for the EU Member States, Iceland and Norway, 2010 edition*, Luxembourg, Office for Official Publications of the European Union, 2010.
([21]) Ibid.

Figure 10.12: Shares of environmental and labour taxes in total tax revenues, EU-27
(%)

Key figures in 2009:

Share of environmental taxes:
6.3 %

Share of taxes on labour:
52.1 %

Share of other taxes:
41.6 %

Source: Eurostat (online data code: tsdgo410)

Indicator relevance

One of the policy guiding principles of the EU Sustainable Development Strategy is to 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. More specifically, the Strategy encourages Member States to consider further steps to shift taxation from labour into resource and energy consumption and/or pollution.

Definition

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 a proxy) of a factor that has proven to have a specifically negative impact on the environment. Environmental tax revenues stem from four types of taxes: energy taxes; transport taxes; pollution taxes; and 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).

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 that 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 actions of, and trust in, the main EU institutions. The indicator should be interpreted with care because a number of factors, in particular, the public awareness of the EU institutions, the socio-economic context and/or personal factors of the respondents, can influence the perception.

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 existing 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 EU law

Information on the transposition of EU law is extracted from the annual reports of the Commission on the monitoring of the application of EU 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 enacted 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). Information on voter turnout in EU parliamentary elections is extracted from the European Parliament website (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 Luxembourg) and Member States with a civic obligation to vote (Italy).

The Eurostat estimates of EU averages are calculated based on 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 (pluralise both or neither)), 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 and 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.

Compilation of the taxes breakdown by economic functions is a task for the Directorate General for Taxation and Customs Union. The lists of taxes and social contributions specified according to national classification of taxes and social contributions so called the National Tax List is used to achieve another split of taxes. The separation of taxes into three economic functions (consumption, labour and capital) and identification of an environmental tax category inevitably lead to simplifications and somewhat hybrid categories. This type of statistics is published and other sort of classification is described in the annual publication: 'Taxation trends in the European Union'.

http://epp.eurostat.ec.europa.eu/portal/page/portal/government_finance_statistics/publications/other_publications

Labour taxes comprise of 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 (usage of the '/' might make 'pollution' and 'resource' seem the same tax type, rather than the two separate tax types that they must be in order to fulfil the preceding statement that there are 'four types of taxes') 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 wastewater collection services) are in general excluded.

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

Non-member States

AL	Albania
CH	Switzerland
MK	Former Yugoslav Republic of Macedonia
NO	Norway

Complete list of EU sustainable development indicators

This annex lists the complete EU SDI set (including indicators "under development" and "to be developed") as available on the Eurostat SDI webpages as of May 2011. It links the indicators to the corresponding issues in the present 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:

- Europe 2020: Europe 2020 headline indicators
- GI: Eurostat's globalisation indicators
- SEBI: Streamlining European 2010 biodiversity indicators (SEBI 2010)
- MDG: Millennium development goals indicators
- UN-CSD: United Nations Commission for Sustainable Development indicators of sustainable development
- EEA: European Environment Agency core set of indicators
- LAEKEN: Common indicators on social protection and social inclusion
- OECD: OECD factbook indicators

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
SOCIOECONOMIC DEVELOPMENT				
tsdec100	Real GDP per capita, growth rate and totals	Real GDP per capita	51	(OECD), (UN-CSD)
	*Real net national income (or gross national income or net disposable income) per capita**			(OECD)
Economic development				
tsdec210	Investment by institutional sectors	Investment	55	(UN-CSD)
tsdec220	Dispersion of regional GDP per inhabitant	Regional disparities in GDP	57	(OECD)
tsdec230	Net national income			(OECD)
tsdec240	Household saving rate	Household saving	59	(OECD)
Innovation, competitiveness and eco-efficiency				
tsdec310	Real labour productivity growth per hour worked	Labour productivity	61	(OECD), (UN-CSD)
tsdec320	Total R&D expenditure	Research and development expenditure	63	(OECD), (UN-CSD)
tsdec360	Energy intensity of the economy	Energy intensity	65	(OECD), (EEA), (UN-CSD)
tsdec330	Real effective exchange rate			
tsdec340	Turnover from innovation			
Employment				
tsdec410	Total employment rate	Employment	67	Europe 2020, (OECD), LAEKEN
tsdec420	Employment rate, by gender	Female employment	70	Europe 2020, (OECD), LAEKEN
tsdec430	Employment rate, by highest level of education attained	Employment	69	
tsdec440	Dispersion of regional employment rates, by gender	Regional disparities in employment	71	(OECD), (LAEKEN)
tsdec450	Unemployment rate, by gender	Unemployment	73	(OECD), (LAEKEN)
tsdec460	Unemployment rate, by age group	Unemployment	74	(LAEKEN)
Indicators to be developed				
	Genuine savings			
	Eco-innovations			
	Effects of innovation on material and energy efficiency and on the environment and safety			
	R&D expenditure relevant to SD			
	Adjusted net disposable income of households			
SUSTAINABLE CONSUMPTION AND PRODUCTION				
tsdpc100	Resource productivity	Resource productivity	86	
Resource use and waste				
tsdpc210	Non-mineral waste generation	Generation of non-mineral waste	93	(UN-CSD)
	Domestic material consumption per inhabitant	Domestic material consumption	X	(UN-CSD)
tsdpc220	Components of domestic material consumption	Domestic material consumption	89	(UN-CSD)
tsdpc230	Domestic material consumption by material	Domestic material consumption	91	(UN-CSD)
tsdpc240	Municipal waste treatment, by type of treatment method	Recycled and composted municipal waste	98	(EEA), (UN-CSD)

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
	*Generation of hazardous waste, by economic activity**	Generation of hazardous waste	X	(UN-CSD)
tsdpc260	Emissions of sulphur oxides, by source sector	Atmospheric emissions	100	EEA
tsdpc270	Emissions of nitrogen oxides (NO_x) by source sector	Atmospheric emissions	100	EEA
tsdpc280	Emissions of non-methane volatile organic compounds (NMVOC) by source sector	Atmospheric emissions	100	EEA
tsdpc290	Emissions of ammonia (NH_3) by source sector	Atmospheric emissions	100	EEA
Consumption patterns				
tsdpc310	Electricity consumption of households	Electricity consumption of households	108	
tsdpc320	Final energy consumption by sector	Final energy consumption	110	(EEA), (UN-CSD)
tsdpc330	Consumption of certain foodstuffs			
tsdpc340	Motorisation rate	Car ownership	112	
Production patterns				
tsdpc410	Organisations and sites with a registered environmental management system	Environmental management systems	114	
tsdpc420	Ecolabel licences	Ecolabels	117	
tsdpc430	*Area under agri-environmental commitment**	Area under agri-environmental commitment	119	
tsdpc440	Area under organic farming	Organic farming	121	(EEA), (UN-CSD)
tsdpc450	Livestock density index	Livestock density index	123	
Contextual indicators				
tsdpc510	Average number of persons per household	Number of persons in households	104	
tsdpc520	Final consumption expenditure of households, by consumption purpose	Household expenditure	106	
Indicators to be developed				
	Raw material consumption			
	Green public procurement			
	Share of consumption of products with an ecolabel / Awareness of ecolabels			
	Nitrogen balance			(SEBI)
	Ethical financing			
	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			
	Employment in the environmental goods and services sector			
SOCIAL INCLUSION				
tsdsc100	Population at risk of poverty or social exclusion	Risk of poverty or social exclusion	135	Europe 2020, (LAEKEN)
Monetary poverty and living condition				
tsdsc210	Persistent-at-risk-of-poverty rate			LAEKEN
tsdsc280	Persons at-risk-of-poverty after social transfers	Risk of poverty after social transfers	137	Europe 2020
tsdsc350	Persons at-risk-of-poverty after social transfers by gender	Risk of poverty after social transfers	137	Europe 2020

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
tsdsc230	At-risk-of-poverty rate, by age group	Risk of poverty after social transfers	138	(LAEKEN)
tsdsc240	At-risk-of-poverty rate, by household type	Risk of poverty after social transfers	138	LAEKEN
tsdsc270	Severely materially deprived persons	Severe material deprivation	141	Europe 2020, LAEKEN
tsdsc250	Relative median at-risk-of-poverty gap	Intensity of poverty	143	(LAEKEN)
tsdsc260	Inequality of income distribution	Income inequalities	144	(OECD), (LAEKEN)
Access to labour market				
tsdsc310	Persons living in households with very low work intensity	Households with low work intensity	145	Europe 2020, LAEKEN
tsdsc320	In work at-risk-of-poverty rate	Working poor	147	LAEKEN
tsdsc330	Total long-term unemployment rate	Long-term unemployment	148	(OECD), LAEKEN
tsdsc340	Gender pay gap in unadjusted form	Gender pay gap	150	
Education				
tsdsc410	Early leavers from education and training	Early school leavers	151	Europe 2020, LAEKEN
tsdsc420	At-risk-of-poverty rate, by highest level of education attained	Risk of poverty after social transfers	139	
tsdsc430	Persons with low educational attainment, by age group	Adults with low educational attainment	153	LAEKEN
tsdsc440	Life-long learning	Life-long learning	154	(UN-CSD)
tsdsc450	Low reading literacy performance of pupils	Low reading literacy of pupils	155	OECD, LAEKEN
tsdsc460	Individuals' level of computer skills			(OECD)
tsdsc470	Individuals' level of internet skills			
Contextual indicators				
	*Public expenditure on education**			(OECD), (LAEKEN)
	*Child well-being**			LAEKEN
	*Adequacy of housing conditions**			(LAEKEN)
DEMOGRAPHIC CHANGES				
tsdde100	Employment rate of older workers	Employment rate of older workers	167	(OECD), LAEKEN
Demography				
tsdde210	Life expectancy at age 65, by gender	Life expectancy at age 65	169	(LAEKEN)
tsdde220	Total fertility rate	Fertility rate	171	(OECD), (UN-CSD)
tsdde230	Crude rate of net migration plus adjustment	Migration	173	(OECD)
Old-age income adequacy				
tsdde310	Aggregate replacement ratio	Income level of over-65s compared to before	177	LAEKEN
tsdde320	At-risk-of-poverty rate of elderly people	Risk of povety for over-65s	179	LAEKEN
Public finance sustainability				
tsdde410	General government debt	Public debt	181	(OECD)
tsdde420	Average exit age from the labour market, by gender	Retirement age	183	LAEKEN
Contextual indicators				
tsdde510	Old-age dependency ratio	Elderly population compared to working-age population	175	(OECD), (UN-CSD), (LAEKEN)

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
tsdde511	Projected old age dependency ratio	Elderly population compared to working-age population	175	
	*Population structure or median age of population**			
tsdde520	Pension expenditure projections (baseline scenario)	The impact of ageing on public expenditure	186	(OECD), (LAEKEN)
tsdde530	Expenditure on care for the elderly	Expenditure on care for the elderly	184	
	PUBLIC HEALTH			
tsdph100	Healthy life years and life expectancy at birth, by gender	Life expectancy and healthy life years	196	(OECD), (UN-CSD), LAEKEN
Health and health inequalities				
tsdph210	Death rate due to chronic diseases, by gender	Deaths due to chronic diseases	198	
tsdph220	Healthy life years and life expectancy at age 65, by gender	Life expectancy and healthy life years	196	LAEKEN
tsdph240	Suicide death rate, total by age group	Suicides	201	(OECD), (UN-CSD)
tsdph250	Suicide death rate, males by age group	Suicides	X	(OECD), (UN-CSD)
tsdph260	Suicide death rate, females by age group	Suicides	X	(OECD), (UN-CSD)
tsdph270	Self-reported unmet need for medical examination or treatment, by income quintile	Unmet needs for healthcare	202	LAEKEN
Determinants of health				
tsdph320	Index of production of toxic chemicals, by toxicity class	Production of toxic chemicals	204	
tsdph370	Urban population exposure to air pollution by particulate matter	Exposure to air pollution by particulate matter	206	(EEA), (UN-CSD)
tsdph380	Urban population exposure to air pollution by ozone	Exposure to air pollution by ozone	208	(EEA), (UN-CSD)
tsdph390	Proportion of population living in households considering that they suffer from noise	Annoyance by noise	210	
tsdph400	Serious accidents at work	Serious accidents at work	211	
Indicators to be developed				
	Inequalities			
	Mental health			
	Disability			
	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			(OECD), (LAEKEN)
	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			
	CLIMATE CHANGE AND ENERGY			
tsdcc100	Greenhouse gas emissions	Greenhouse gas emissions	220	Europe 2020, EEA, (UN-CSD)
tsdcc110	Share of renewable energy in gross final energy consumption	Consumption of renewables	224	Europe 2020, (OECD), (EEA), (UN-CSD)

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
Climate change				
tsdcc210	Greenhouse gas emissions by sector (including sinks)	Greenhouse gas emissions by sector	227	EEA
	Projections of greenhouse gas emissions	Greenhouse gas emissions	X	EEA
	Emissions from international bunkers	Greenhouse gas emissions by sector	X	EEA
	Emissions from land use, land use change and forestry	Greenhouse gas emissions by sector	X	EEA
tsdcc220	Greenhouse gas emissions intensity of energy consumption	Greenhouse gas emissions intensity of energy consumption	229	
	Global surface average temperature deviation	Global surface average temperature	X	(EEA)
Energy				
tsdcc310	Energy dependency	Energy dependency	232	GI
tsdcc320	Gross inland energy consumption by fuel	Gross inland energy consumption	234	(EEA)
tsdcc330	Electricity generated from renewable sources	Electricity generation from renewables	236	(EEA)
tsdcc340	Share of renewable energy in fuel consumption of transport	Consumption of renewable energy in transport	238	
tsdcc350	Combined heat and power generation	Combined heat and power	240	
tsdcc360	Implicit tax rate on energy	Implicit tax rate on energy	242	
Indicators to be developed				
	Adaptation to climate change			
	*Global greenhouse emissions resulting from European consumption**			
	Radioactive waste			(UN-CSD)
	External costs of energy use			
SUSTAINABLE TRANSPORT				
tsdtr100	Energy consumption of transport relative to GDP	Energy consumption of transport relative to GDP	253	
Transport and mobility				
tsdtr210	Modal split of passenger transport	Modal split of passenger transport	259	(UN-CSD)
tsdtr220	Modal split of freight transport	Modal split of freight transport	257	(UN-CSD)
tsdtr230	Volume of freight transport relative to GDP	Volume of freight transport relative to GDP	261	(EEA)
tsdtr240	Volume of passenger transport relative to GDP	Volume of passenger transport relative to GDP	263	(EEA)
tsdtr250	Energy consumption by transport mode	Energy consumption of transport relative to GDP	253	
	*Investment in transport infrastructure by mode**	Investment in transport infrastructure	264	
Transport impacts				
tsdtr410	Greenhouse gas emissions by transport mode	Greenhouse gas emissions from transport	268	EEA
tsdtr420	People killed in road accidents	People killed in road accidents	270	(OECD)

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
tsdtr430	Emissions of nitrogen oxides from transport	Emissions of ozone precursors from transport	274	EEA
tsdtr440	Emissions of particulate matter from transport	Emissions of particulate matter from transport	276	EEA
tsdtr450	Average CO_2 emissions per km from new passenger cars	Average CO_2 emissions per km from new passenger cars	272	
Contextual indicators				
tsdtr310	Annual harmonised index of consumer prices for transport	Passenger transport prices	266	
Indicators to be developed				
	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)
NATURAL RESOURCES				
tsdnr100	Common bird index	Abundance of common birds	285	(EEA), (SEBI), (UN-CSD)
tsdnr110	*Fish catches taken from stocks outside safe biological limits**	Conservation of fish stocks	287	(EEA), (MDG), (UN-CSD)
Biodiversity				
tsdnr210	Sufficiency of sites designated under the EU Habitats *and Birds* directive	Protected areas	290	(EEA), SEBI, (MDG)
	*Deadwood on forest land**	Deadwood on forest land	X	(SEBI)
Fresh water resources				
tsdnr310	Surface and groundwater abstraction as a share of available resources	Water abstraction	292	(OECD), (EEA), (MDG), (UN-CSD)
tsdnr320	Population connected to urban waste water treatment with at least secondary treatment			(EEA)
tsdnr330	Biochemical oxygen demand in rivers	Water quality in rivers	295	(EEA), (SEBI), (UN-CSD)
Marine ecosystems				
tsdnr420	Fishing fleet, total engine power	Fishing capacity	297	(OECD), (EEA),
Land use				
tsdnr510	*Increase in certain categories of land cover**	Increase in built-up land	299	(EEA), (UN-CSD)
tsdnr520	Forest increment and fellings		301	(SEBI),
tsdnr530	*Forest trees damaged by defoliation**	Forest trees damaged by defoliation	X	(UN-CSD)
	*Percentage of total land area at risk of soil erosion**			
Indicators to be developed				
	Biodiversity index			
	Abundance and distribution of selected species			(EEA), SEBI
	Change in status of species of European interest			(SEBI)
	Red List index for European species			(EEA), (UN-CSD), (MDG), SEBI
	Concentration of organic matter as chemical oxygen demand of rivers			
	Effective fishing capacity and quotas			

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
	Structural support to fisheries and % allocated to promote environmentally friendly fishing practices			(OECD)
	Seagrasses			
	Critical load exceedance for nitrogen			SEBI
	Exceedance of nitrate limits in groundwater			
GLOBAL PARTNERSHIP				
tsdgp100	Official Development Assistance as share of gross national income	Official development assistance	311	GI, (OECD), (MDG), (UN-CSD)
Globalisation of trade				
tsdgp210	EU imports from developing countries, by income group	Imports from developing countries	314	(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			(MDG), (UN-CSD)
tsdgp240	Aggregated measurement of support for agriculture	Subsidies for EU agriculture	318	(MDG)
Financing for sustainable development				
tsdgp310	Financing for developing countries, by type	Financing for developing countries	320	
tsdgp320	Foreign direct investment in developing countries, by income group	Share of foreign direct investment in low-income countries	322	(GI), (UN-CSD)
tsdgp330	Official development assistance, by income group	Share of official development assistance for low-income countries	324	(OECD)
tsdgp340	Untied official development assistance	Share of untied assistance	326	(MDG)
tsdgp350	Bilateral official development assistance dedicated to social infrastructure services	Assistance for social infrastructure services	328	(MDG)
tsdgp350	Bilateral official development assistance dedicated to debt	Assistance for debt relief	329	(MDG)
Global resource management				
tsdgp410	CO_2 emissions per inhabitant in the EU and in developing countries	CO_2 emissions per inhabitant	330	GI, (MDG)
tsdgp350	Bilateral official development assistance dedicated to water supply and sanitation	Assistance for water supply and sanitation	332	
Contextual indicators				
	*Population living on less than 1USD a day**			(MDG), (UN-CSD)
tsdgp520	Official Development Assistance per capita in donor and recipient countries	Official development assistance	312	(MDG)
	*Population with sustainable access to an improved water source**			(MDG), (UN-CSD)
Indicators to be developed				
	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 GHG emission reductions in developing countries			
	Global footprint			

Table code	Indicator name (* = *under development*)	Issue	Page	Other indicator sets
	GOOD GOVERNANCE			
Policy coherence and effectiveness				
tsdgo210	New infringement cases	Infringement cases	346	
tsdgo220	Transposition of EU law, by policy area	Transposition of EU law	348	
Openness and participation				
tsdgo310	Voter turnout in national and EU parliamentary elections	Voter turnout	350	
tsdgo320	E-government on-line availability	E-government availability	352	
tsdgo330	E-government usage by individuals	E-government usage	354	
Economic instruments				
tsdgo410	Shares of environmental and labour taxes in total tax revenues	Environmental taxes compared to labour taxes	356	
Contextual indicators				
tsdgo510	Level of citizens´confidence in EU institutions	Citizens' confidence in EU institutions	344	
Indicators to be developed				
	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			

The Europe 2020 Strategy

The Europe 2020 Strategy ([1]), adopted by the European Council in June 2010 ([2]), builds on lessons learned from the earlier Lisbon Strategy, recognising its strengths (the right goals of growth and job creation, 18 million new jobs created since 2000) but addressing its weaknesses (poor implementation, with big differences between EU countries in the speed and depth of reform). The new strategy also reflects changes in the EU's situation since 2000 — in particular the immediate need to recover from the economic crisis. The objective of the strategy is to turn the EU into a smart, sustainable and inclusive economy, delivering high levels of employment, productivity and social cohesion. Progress towards targets set at European and national level will be monitored through eight headline indicators ([3]).

Europe 2020 headline targets and their corresponding headline indicators

Headline targets	Indicators
75 % of the population aged 20-64 should be employed	Employment rate by gender, age group 20-64
3 % of the EU's GDP should be invested in R&D	Gross domestic expenditure on R&D (GERD)
Reduction of the greenhouse gas emissions by 20 % compared to 1990	Greenhouse gas emissions, base year 1990
Increase in the share of renewable energy sources in final energy consumption to 20 %	Share of renewables in gross final energy consumption
20 % increase in energy efficiency	Energy intensity of the economy *(proxy indicator for Energy savings, which is under development)*
The share of early school leavers should be under 10 % and at least 40 % of 30-34 years old should have completed a tertiary or equivalent education	Early leavers from education and training by gender
	Tertiary educational attainment by gender, age group 30-34
Reduction of poverty by aiming to lift at least 20 million people out of the risk of poverty or exclusion	Population at risk of poverty or exclusion *(union of the three following sub-indicators)*
	People living in households with very low work intensity
	People at risk of poverty after social transfers
	Severely materially deprived people

Europe 2020 flagship initiatives ([4])

The targets are aimed at achieving smart, sustainable and inclusive growth and the actions needed at national, EU and international level to underpin them will be supported by seven flagship initiatives whose progress will be monitored through additional indicators.

The flagship initiatives are:

Smart growth:

- **'Innovation Union'** to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs.
- **'Youth on the move'** to enhance the performance of education systems and to facilitate the entry of young people to the labour market.
- **'A digital agenda for Europe'** to speed up the roll-out of high-speed Internet and reap the benefits of a digital single market for households and firms.

([1]) Commission communication, Europe 2020 – A strategy for smart, sustainable and inclusive growth, COM(2010) 2020.
([2]) Brussels European Council, Conclusions, 17 June 2010.
([3]) The headline indicators can be consulted and downloaded from the Europe 2020 webpages on the Eurostat website.
([4]) Commission communications have been published or are currently under preparation for each of the seven flagship initiatives, and can be downloaded from the European Commission's Europe 2020 webpages.

Sustainable growth:

- **'Resource efficient Europe'** to help decouple economic growth from the use of resources, support the shift towards a low carbon economy, increase the use of renewable energy sources, modernise our transport sector and promote energy efficiency.
- **'An industrial policy for the globalisation era'** to improve the business environment, notably for SMEs, and to support the development of a strong and sustainable industrial base able to compete globally.

Inclusive growth:

- 'An agenda for new skills and jobs' to modernise labour markets and empower people by developing their skills throughout the life cycle with a view to increase labour participation and better match labour supply and demand, including through labour mobility.

'European platform against poverty' to ensure social and territorial cohesion such that the benefits of growth and jobs are widely shared and people experiencing poverty and social exclusion are enabled to live in dignity and take an active part in society.

Synergies and complementarities between Europe 2020 and the EU SDS

The EU SDS describes its relationship to the Lisbon Strategy, which was the predecessor of Europe 2020, as complementary. The EU SDS, by providing the long-term perspective and clear and coherent guidance to all policy areas, sets the overall framework, within which short- and medium-term strategies should operate. Whereas the EU SDS is primarily concerned with quality of life, intra- and inter-generational equity and coherence between all policy areas, including international aspects, it recognises the role of economic development in facilitating the transition to a more sustainable society. The measures of Europe 2020, for instance, should therefore be compatible with the long-term sustainable development goals of the EU SDS.

Europe 2020 has drawn upon several of the challenges addressed in the EU SDS. These include resource efficiency, the '20/20/20' climate and energy targets, as well as poverty reduction and education. These synergies are reflected in the EU set of Sustainable Development Indicators, which comprise the indicators presented in this report, and cover all but one of the Europe 2020 headline indicators (see Table 0.1 above):

- The theme **'socioeconomic development'** includes the indicators 'Employment rate by gender, age group 20-64', 'Gross domestic expenditure on R&D (GERD)' and 'Energy intensity of the economy'.
- The theme **'social inclusion'** contains the bulk of the Europe 2020 Strategy's headline indicators, namely 'Population at risk of poverty or exclusion' (used as headline indicator of this theme) and its three sub-indicators ('Persons living in households with very low work intensity', 'Persons at risk of poverty after social transfers' and 'Severely materially deprived persons') as well as 'Early leavers from education and training by gender'.
- The theme **'climate change and energy'** draws on the indicators 'Greenhouse gas emissions' and 'Share of renewables in gross final energy consumption', both being used as headline indicators of this theme.

Measuring progress, well-being and sustainable development

'GDP and beyond' initiative of the European Commission

In 2007, the Commission together with the European Parliament, the Club of Rome, the OECD and WWF hosted the 'Beyond GDP' ([5]) conference to discuss the most appropriate ways to measure progress and well-being. Following the conference the Commission adopted a communication on GDP and beyond ([6]), which laid out a roadmap for developing suitable indicators to complement GDP in policy analysis and debates.

Commission on the Measurement of Economic Performance and Social Progress ('Stiglitz-Sen-Fitoussi commission')

In 2008 the French President, Nicolas Sarkozy, asked three eminent economists, Joseph E. Stiglitz, Amartya Sen and Jean-Paul Fitoussi, to chair a commission with the objective of:

- identifying the limits of GDP as an indicator of economic performance and social progress, including the problems with its measurement;
- considering what additional information might be required for the production of more relevant indicators of social progress;
- assessing the feasibility of alternative measurement tools, and to discuss how to present the statistical information in an appropriate way.

The commission's conclusions and recommendations have been published in a final report ([7]).

OECD green growth strategy and better life initiative

The OECD's Green Growth Strategy ([8]) provides guidance on how to pursue economic growth which is compatible with environmental sustainability. The strategy proposes the measurement of green growth around four groups of indicators:

- indicators of environmental and resource productivity;
- indicators that monitor the evolution of the natural asset base;
- indicators of the environmental quality of life;
- indicators of economic opportunities and policy responses.

The OECD has also developed an index to measure well-being under its Better Life Initiative ([9]). The index is accompanied by a compendium of well-being indicators and a report, 'How's life?', will be published towards the end of 2011.

Translation of the initiatives into actions for the European Statistical System

The European Statistical System, which is the partnership between Eurostat and the national authorities responsible for statistics, has established a so-called sponsorship group on 'Measuring Progress, Well-being and Sustainable Development'. The objectives of this high-level group are to set priorities for implementing the recommendations of the Stiglitz-Sen-Fitoussi commission and the action lines of

([5]) Beyond GDP website.
([6]) Commission communication, GDP and beyond: Measuring progress in a changing world, COM(2009) 433.
([7]) Report of the Commission on the Measurement of Economic Performance and Social Progress, 2009.
([8]) OECD webpages on green growth.
([9]) OECD better life initiative website.

the GDP and beyond communication and to initiate the development of statistical information and sets of indicators to answer the related challenges.

The Sponsorship Group has been co-chaired by the Chief Statistician of the EU and the Director-General of the French Statistical Office, INSEE. Three task forces were created to look at (i) the household perspective and distributional aspects of income, consumption and wealth; (ii) multidimensional measures of quality of life; and (iii) environmental sustainability. The task forces have drawn on the expertise of the national statistical offices of most of the EU and EFTA countries, as well as OECD and UNECE. The 96th conference of the Directors-General of the National Statistical Institutes have issued a formal statement on this work ([10]), referring in particular to the need for further work on the households perspective, distributional aspects in our societies, the consumption perspective of environmental pressures, objective and subjective conditions of people's quality of life and complementarities between micro data sources (in particular national accounts and surveys on income and living conditions, on labour force, on household budget and time use).

The work of the Sponsorship Group will lead to the publication of a report at the end of 2011, paving the way for statistical results that should become visible over the coming years.

([10]) Sofia Memorandum: Measuring progress, well-being and sustainable development.

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European Commission

Sustainable development in the European Union — 2011 monitoring report of the EU sustainable development strategy

Luxembourg: Publications Office of the European Union

2011 — 377 pp. — 21 x 29.7 cm

Theme: General and regional statistics
Collection: Statistical books

ISBN 978-92-79-18516-8
doi:10.2785/1538
Cat. No KS-31-11-224-EN-C

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KS-31-11-224-EN-C

Sustainable development in the European Union

2011 monitoring report of the EU sustainable development strategy

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.

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 is intended to contribute to the biennial review on the implementation of the strategy by the European Council.

The statistics cover a wide range of issues related to 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 the latest year available (2009/10 where possible).

http://ec.europa.eu/eurostat

Publications Office

ISBN 978-92-79-18516-8

9 789279 185168

Price (excluding VAT) in Luxembourg: EUR 20