

# Measuring progress towards a more sustainable Europe

2007 monitoring report  
of the EU sustainable development strategy





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# Foreword

The EU sustainable development strategy, renewed by the European Council in June 2006, brings together the many strands of economic, social and environmental policy under one overarching objective: to continually improve the quality of life of Europeans and citizens worldwide, and to guarantee the well-being of future generations. This approach is reinforced and supported by the Lisbon Strategy for growth and jobs, which paves the way for a more dynamic European economy.

The European Commission is firmly committed to sustainable development, honouring the obligations made at the 1992 Rio Earth Summit. The Commission is accountable to European citizens for its actions, and reporting on progress towards the commonly agreed goals is an integral part of the strategy. Eurostat has played a key role in developing and reviewing a set of sustainable development indicators for this purpose. Based on these indicators and the objectives highlighted in the strategy, this report provides a quantitative assessment of whether Europe is on a sustainable development path. This objective statistical picture of what Europe has achieved in recent years complements the policy analysis of the European Commission progress report on the implementation of the sustainable development strategy.

I am sure that the information provided in this report will contribute to an increased public awareness of the wide-ranging and often complex challenges which our society faces today.



Joaquín Almunia

Commissioner for Economic and Monetary Affairs

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## Executive summary

The Union's commitment to sustainable development at the first Earth Summit in Rio de Janeiro in 1992 led in due course to an EU-wide sustainable development strategy, which was adopted by the European Council in June 2001 in Gothenburg, and renewed in June 2006. The renewed strategy sets out a single, coherent approach to how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development. It reaffirms the overall aim of achieving continuous improvement of the quality of life and well-being on earth for present and future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion <sup>(1)</sup>.

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<sup>(1)</sup> Review of the EU sustainable development strategy, Council of the European Union, document 10117/06 of 9 June 2006.

Measuring progress towards sustainable development is an integral part of the renewed strategy, which foresees in particular that Eurostat produces a monitoring report every second year, based on the EU set of sustainable development indicators (SDIs). A first monitoring report was published by Eurostat in December 2005. Following the mandate arising from the strategy, the Commission carried out a review of the 2005 indicator set in cooperation with the working group on SDIs, which is composed of both statistical and policy representatives at national and EU level. This new report updates and adapts the 2005 edition in the context of the renewed strategy, analysing progress in the implementation of the renewed objectives. It uses the reviewed indicator set as far as possible, with the constraint that the final list of indicators had not been adopted at the time of drafting the report.

The EU strategy highlights commonly agreed objectives to put Europe on what has been implicitly defined as a sustainable development path. This report therefore provides a relative assessment of whether Europe is moving in the right direction, and with sufficient haste, given these objectives and targets. The approach is essentially quantitative, focusing the analysis on the EU set of sustainable development indicators, and assessing trends against policy objectives. This monitoring report thus complements the policy analysis provided in the Commission's progress report on the implementation of the sustainable development strategy.

Out of the eleven headline indicators presented in this report, ten monitor the overall objectives associated with the strategy's key challenges. The socioeconomic development headline indicator completes the set by monitoring the strategy's key objective of economic prosperity.

An evaluation of progress since 2000, based on the headline indicators, presents a rather mixed picture. Recent developments can be considered as favourable for four of eleven indicators, namely those for:

- socioeconomic development — GDP growth increased by 1.6 % per year on average in the EU-27, from 2000 to 2006;
- sustainable consumption and production — resource productivity increased by 2.3 % per year on average between 2000 and 2004 in the EU-15, showing decoupling between resource use and economic growth;
- demographic changes — the employment rate of older workers increased by 6.6 percentage points between 2000 and 2006 in the EU-27, making it possible to reach the target of 50 % by 2010 if this rate of growth is sustained;



- global partnership — the EU-15 official development assistance, as a share of gross national income increased overall by 5.1 % per year on average between 2000 and 2005, and the 2005 intermediate target was exceeded.

Changes are clearly unfavourable for the two indicators related to climate change and energy as the EU-15 reduction in greenhouse gases, and the increase of renewables in energy consumption are still far from the targets set in the strategy. Nevertheless, measures either planned or implemented mean that the Kyoto target can still be achieved and that further progress on the share of renewables is likely.

There has been moderate progress for the four other indicators monitoring the key challenges related to transport, natural resources, and public health. There are no real signs of decoupling the energy consumption of transport from economic growth. The common birds index has been relatively stable since 2000, and fish catches taken from stocks outside safe biological limits showed levels in 2005 comparable to those of 2000. Healthy life-years at birth are growing more quickly compared to life expectancy, but by less than 1 % per year.

A quantitative evaluation of the rate of progress in reducing the risk of poverty was not possible because of a change in data source. A qualitative evaluation with respect to the objective is however possible, since the latest figure show that in 2005, 16 % of citizens in the EU-25 were still at risk of poverty, which cannot be considered to reflect the ‘decisive impact on the reduction of the number of people at risk of poverty and social exclusion’ required by the strategy by 2010.

While the headline indicators provide a useful snapshot of progress across the key challenges, looking at other indicators within the set provides a fuller, more nuanced picture. A more detailed overview of progress is given by going through the operational objectives that can be measured, focusing more particularly on the concrete, quantitative targets within each key challenge.

Regarding good governance, although there is no headline indicator, a number of indicators monitor some of the guiding principles and objectives not covered in other themes. Although these tend to be formulated in qualitative terms, and are difficult to monitor with existing statistics, some limited conclusions can be derived from the analysis in this report. Regarding the policy coherence and governance principle, vertical coherence <sup>(2)</sup> has indeed improved, since the increase in the number of infringement cases is slowing down, and the overall rate of transposition of European directives into national legislation has exceeded the target set by the Council in 2001. Regarding the principles of open and democratic society, the decrease in participation in elections has stabilised since 2000, although there is still a gap of more than 20 % between national and European voter turnouts in 15 countries. Access to public information has improved: e-government is now widely available and usage has increased in most countries from 2004 to 2006. Finally, regarding the principle of making the polluter pay, and the use of economic instruments, it is clear that the shift from labour taxes to environmental taxes advocated in the strategy has not taken place. Adequate quantitative information is lacking to measure the principles of policy integration and of citizen, business and social partners involvement.

Overall, based on the evaluation of the objectives and targets highlighted in the sustainable development strategy, the analysis in this report clearly shows that the European Union is not yet on a sustainable development path. This is particularly the case for the key challenge on climate change and clean energy, where, based on historical trends, none of the targets are within reach at this stage, although a number of measures and policies are now in place which should have a positive impact. In addition, there are a number of key challenges where progress is too modest. Policy areas where there have been positive developments include sus-

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<sup>(2)</sup> ‘Vertical’ coherence refers to coherence between different levels of government (e.g. the EU and the national level), whereas ‘horizontal’ coherence refers to coherence between different areas of policy.

tainable consumption and production, demographic changes, and global poverty. However, since assessments are relative, a positive evaluation does not necessarily mean that no further progress is necessary, but rather that these positive developments must be sustained to reach objectives and targets.

As a result of statistical development and adaptation to the renewed strategy, the set of indicators presented here already includes many changes since the first set adopted in 2005. However, it is clear from the information presented in this report that there are limitations to some existing indicators, and some objectives are not adequately (or not at all) monitored due to the lack of appropriate statistics. As specified in the renewed strategy, the Commission, in cooperation with Member States, will continue to 'develop and review indicators to increase their quality and comparability as well as their relevance to the renewed EU SDS'. In addition, while some qualitative objectives are difficult to measure based on quantitative information, the indicators in the SDI set are well suited to evaluating the quantitative targets and concrete objectives contained in the renewed strategy. Regular reporting on progress towards these objectives and targets will make it possible to build up an increasingly accurate picture of how sustainable European development is.

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# Introduction

Sustainable development is a fundamental and overarching objective of the European Union (EU), enshrined in the Treaty<sup>(3)</sup>. It can be defined simply as the pursuit of a better quality of life for everyone, for present and future generations. It is a vision of progress that links economic development, protection of the environment and social justice, and therefore concerns all citizens of the EU, and indeed of the whole world.

The Union's commitment to sustainable development at the first Earth Summit in Rio de Janeiro in 1992 led in due course to an EU-wide sustainable development strategy, which was adopted by the European Council in June 2001 in Gothenburg, and renewed in June 2006. The renewed strategy sets out a single, coherent approach on how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development. It reaffirms the overall aim of achieving continuous improvement of the quality of life and well-being on earth for present and future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion<sup>(4)</sup>.

Measuring progress towards sustainable development is an integral part of the renewed strategy, which foresees in particular that Eurostat produces a monitoring report every second year, based on the EU set of sustainable development indicators (SDIs). A first monitoring report was published by Eurostat in December 2005. Following the mandate arising from the strategy, the Commission carried out a review of the 2005 indicator set in cooperation with the working group on SDIs, which is composed of both statistical and policy representa-

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<sup>(3)</sup> Article 2 of the Treaty on European Union.

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<sup>(4)</sup> Review of the EU sustainable development strategy, Council of the European Union, document 10117/06 of 9 June 2006.



tives at national and EU level. This new report updates and adapts the 2005 edition in the context of the renewed strategy, analysing progress in the implementation of the renewed objectives. It uses the reviewed indicator set as far as possible (see Annex), with the constraint that the final list of indicators had not been adopted at the time of drafting this report.

As in the 2005 report, the trends derived from the analysis of indicators are assessed against policy objectives and targets to inform the general public and decision-makers about achievements in attaining the commonly agreed objectives of sustainable development. The approach is essentially quantitative, focusing the analysis on the EU set of sustainable development indicators. This monitoring report thus complements the policy analysis provided in the Commission's progress report on the implementation of the sustainable development strategy.

This chapter sets the background for the analysis by retracing the steps in the development of Eurostat's work on sustainable development indicators, describing the evolution of the policy background, and presenting the reviewed SDI set, as well as the approach used for the assessment and analysis of trends.

## 1. The early stages of Eurostat work on sustainable development indicators

In 1996, the United Nations Commission on Sustainable Development (UNCSD) proposed a list of 134 indicators <sup>(5)</sup>, linked to the thematic chapters of Agenda 21, to be tested, developed and used by governments. As a contribution to the UN's international testing phase, Eurostat produced a pilot study <sup>(6)</sup> containing 46 indicators based on the UN list. In 1998, Eurostat also hosted a meeting with the European countries which were testing the UN list of indicators, to review progress and present results with the aim to advance understanding of methodologies and the way in which SDIs were being developed and used across the Member States.

As a result of the international testing phase, the United Nations Department of Economic and Social Affairs launched a revision of the indicator list. The overall framework and structure of the SDI set were adapted, resulting in a reduced but more policy-oriented set of indicators. Drawing upon and extending the UN revised list of 59 core SDIs, Eurostat issued a second publication <sup>(7)</sup>, containing some 63 indicators.

Following the adoption of the EU sustainable development strategy in Gothenburg in June 2001, the Statistical Programme Committee <sup>(8)</sup> established a task force in September of the same year to develop a common response from the European statistical system to the need for indicators on sustainable development. The task force, comprising statisticians, researchers, members of national administrations, and representatives from other European Commission services, met regularly between April 2002 and April 2005. The Commission endorsed a first set of 155 indicators based on the work of the task force in February 2005 <sup>(9)</sup>. Some 98 indicators from this list formed the basis of the first monitoring report published by Eurostat in December 2005 <sup>(10)</sup>. Upon the expiry of the mandate of the task force at the end of 2005, a working group on sustainable development indicators (SDIs) including representatives from all EU Member States was set up, in order to build on the work of the task force as well as to exchange and expand best practices to all Member States.

<sup>(5)</sup> Indicators of sustainable development framework and methodologies, United Nations, New York, 1996.

<sup>(6)</sup> Indicators of sustainable development — A pilot study following the methodology of the United Nations Commission on sustainable development, European Communities, Luxembourg, 1998.

<sup>(7)</sup> Measuring progress towards a more sustainable Europe — Proposed indicators for sustainable development, European Commission, Luxembourg, 2001.

<sup>(8)</sup> The Statistical Programme Committee (SPC), which is chaired by Eurostat, brings together the heads of Member States' national statistical offices. The SPC discusses the most important joint actions and programmes to be carried out to meet EU information requirements. It agrees a five-year programme, which is implemented by the national authorities and monitored by Eurostat.

<sup>(9)</sup> Sustainable development indicators to monitor the implementation of the EU sustainable development strategy, SEC(2005) 161.

<sup>(10)</sup> *Measuring progress towards a more sustainable Europe — sustainable indicators for the European Union*, 2005 edition. European Commission, Eurostat.



## 2. The renewed EU sustainable development strategy

In June 2006, the European Council adopted a renewed sustainable development strategy. This built on the 2001 strategy and incorporated subsequent commitments such as the external dimension added in 2002 by the European Council in Barcelona, and the plan of implementation of the Johannesburg World Summit on sustainable development <sup>(11)</sup>. It translates the vision of sustainable development into an operational strategy. The document recalls the four key objectives and the ten policy guiding principles agreed by the June 2005 European Council, and organises the core of the operational policy objectives around seven key challenges, with the addition of cross-cutting policies and issues.

<sup>(11)</sup> <http://www.un.org/esa/sustdev/index.html>

### 2.1. Policy guiding principles

In the declaration on guiding principles for sustainable development, the European Union and its Member States have committed to pursue and respect the following objectives and principles to address the challenges of a sustainable development in Europe and the world:

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 business and social partners,
- policy coherence and governance,
- policy integration,
- use best available knowledge,
- precautionary principle,
- make polluters pay.

These principles correspond to the underlying values of a dynamic European model of society and are intended to serve as a basis for the renewed strategy.

### 2.2. Seven key challenges

The renewed strategy underlines that the unsustainable trends identified in the 2001 strategy still persist, while new challenges are arising. The seven key challenges identified as priorities in the renewed strategy therefore largely coincide with the 2001 strategy, with the addition of sustainable consumption and production, and global poverty and sustainable development challenges. They comprise:

- 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 of the key challenges is described in terms of an overall objective, specific operational objectives and targets, and a list of actions.

### 2.3. Cross-cutting policies and issues

The renewed strategy also outlines cross-cutting policies which contribute to the knowledge society, namely education and training, and research and development. It advocates the use of economic instruments in implementing the strategy, while calling for integrated financing mechanisms. It proposes actions towards communication, dissemination and stakeholder involvement.

### 2.4. A new governance cycle

The renewed strategy introduces a governance cycle whereby the December European Council will review progress and priorities every two years. The Commission will contribute by submitting a progress report on implementation of the SDS in the EU and in the Member States, analysing both the present situation and proposing orientations and actions for the future. In doing so, the progress report will draw on the set of SDIs presented in the Eurostat monitoring report, which should therefore be updated every two years.

Three paragraphs (33 to 36) are devoted to the use and improvement of SDIs. The strategy states in particular that the Commission should further develop and review the SDI set with the assistance of the working group on SDIs, with a view to the possible adoption of a limited set of indicators by the Council in 2007.

## 3. Towards a reviewed set of SDIs

The first set of SDIs was endorsed by the European Commission in 2005<sup>(12)</sup>, i.e. before the adoption of the renewed sustainable development strategy by the European Council. Following the mandate of the renewed strategy, the review of this first set was carried out by the Commission in close cooperation with the working group on SDIs, composed of both statistical and policy representatives at national and EU level. The objectives pursued by the Commission with this review were threefold:

- policy relevance: to adapt the SDI set adopted in 2005 to the renewed strategy,
- 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 recent statistical developments.

The reviewed list of SDIs is included in annex and the principles described below.

### 3.1. A thematic framework

In 2005, the indicators were selected and organised using a theme-oriented framework, which was conceived to provide a clear and easily communicable structure and relevance to political decision-making. The framework was based on priority policy issues, while being flexible

<sup>(12)</sup> Sustainable development indicators to monitor the implementation of the EU sustainable development strategy, SEC(2005) 61.





enough to adjust to possible changes in these priorities and objectives, bearing in mind that new issues could emerge. The framework followed a hierarchical approach where indicators are ranked in three levels.

The 2005 framework has been slightly adapted to reflect the wording of the renewed strategy. Each of the seven key challenges was already represented by a theme in the original framework, with the 'social inclusion, demography and migration' challenge split into two themes (social inclusion on the one hand, demographic changes on the other) to reflect the different nature of these two issues. Two other themes have been retained in order to reflect key objectives and guiding principles of the renewed strategy. The theme of socioeconomic development complements the set by focusing on the key objective of economic prosperity, while the theme of good governance is related to the guiding principles of the strategy and other cross-cutting issues.

Although in this report the chapters are ordered in accordance with the sustainable development strategy, the ten themes of the reviewed framework follow a general gradient from the economic, to the social, and then to the environmental and institutional dimensions:

1. socioeconomic development,
2. sustainable consumption and production,
3. social inclusion,
4. demographic changes,
5. public health,
6. climate change and energy,
7. sustainable transport,
8. natural resources,
9. global partnership,
10. good governance.

The themes in the reviewed SDI framework are further divided into subthemes to organise the set in a way that reflects the operational objectives and actions of the sustainable development strategy.

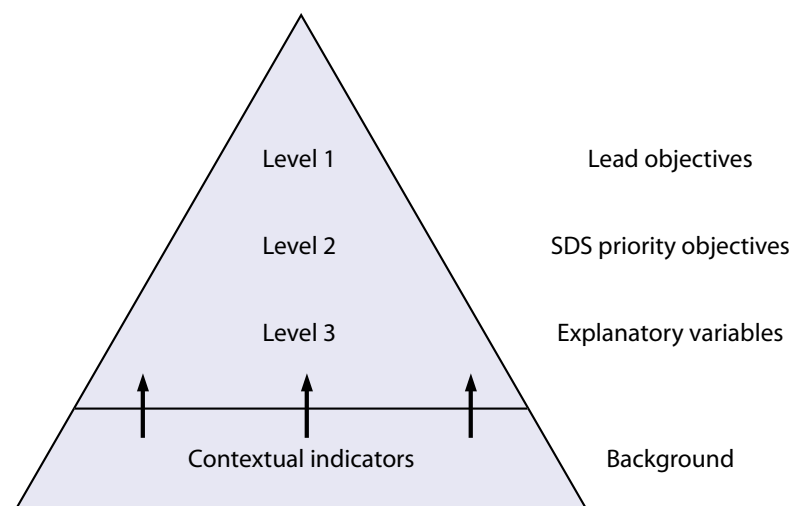
### 3.2. Different kinds of indicators

The reviewed set of SDIs retains the three-storey pyramid structure of the 2005 set. This distinction between the three levels of indicators reflects the structure of the renewed strategy (overall objectives, operational objectives, actions) and also responds to different kinds of user needs. The three-level pyramid is complemented with contextual indicators, as illustrated in Figure 1.

- Headline (or level-1) indicators are at the top of the pyramid. The objective is to monitor the 'overall objectives' of the strategy. They are well-known indicators with a high communication value. They are robust and available for most EU Member States for a period of at least five years.
- The second level of the pyramid consists 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 outlined in the strategy or to other issues which are useful to analyse progress towards the SDS objectives. Breakdowns of level-1 or -2 indicators are usually also found at level 3.

- Contextual indicators are part of the SDI set, but either they do not monitor directly any of the strategy's objectives or they are not policy responsive. Generally they are difficult to interpret in a normative way. However, they provide valuable background information on issues having direct relevance for sustainable development policies and are useful for the analysis.

**Figure 0.1:**  
**The SDI pyramid**



The SDI set also describes indicators which are not yet fully developed but which would be necessary to get a more complete picture of progress. In order to avoid cluttering the list with indicators that remain without any data, a distinction has been made between indicators under development and indicators to be developed.

- 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.

These two types of indicators are described in this report in each chapter's theme overview, in the section on the rationale for the indicators selection. The Commission, with the assistance of the working group on SDIs, will constantly review the situation regarding the development of new and better indicators. This development work will contribute substantially to further improve the homogeneity of the set of indicators.

#### 4. Contents of the report

The main aim of this report is to provide a quantitative analysis of trends in the different sustainable development themes. The emphasis is on visualisation of trends, with graphs and figures being presented rather than tables of data. The actual figures can be consulted and freely downloaded from the Eurostat SDI website, at (<http://ec.europa.eu/eurostat/sustainabledevelopment>).



#### 4.1. The general structure

The structure of the report follows the ten themes of the reviewed SDI framework, reorganised in a way that facilitates cross-references between this report and the Commission's progress report. Each chapter is devoted to one theme, and structured in the same way.

Each chapter begins with a policy background, an assessment of main changes, an indication of why the indicators within that theme were selected, and a description of possible linkages between the theme and other sustainable development issues. The main policy objectives for each theme are summarised in a text box. Additional text boxes also make a link to other important indicator initiatives when relevant.

The section on 'main changes' provides a visual assessment of the changes since 2000<sup>(13)</sup>. The evaluation of changes is based on quantitative rules applied consistently across indicators, differentiating whether there are quantitative targets related to the indicators or not (see Box 0.1). These rules are necessarily somewhat simplistic and arbitrary but they provide a transparent, consistent and easily understandable approach across the report. The symbols provide a visual summary of the answers to the following questions:

- are changes favourable in the context of sustainable development objectives or, if there is a quantitative target, are changes on track to reach the EU target?
- are changes unfavourable in the context of sustainable development objectives or, if there is a quantitative target, is progress achieved still far from the linear path to the EU target?
- are there insufficient data available (e.g. lack of data for some EU Member States, or lack of a sufficient time series) to provide an assessment?

Contextual indicators are included in the report to give background information, in general at the beginning of the subtheme to which they relate, but are not evaluated in the main changes table, as they are not linked to specific policy objectives.

<sup>(13)</sup> The year 2000 was chosen as reference year as it is the last round year before the adoption of the first EU strategy in 2001. Obviously for many indicators changes need to be evaluated over a much longer period of time. It is nevertheless the purpose of this publication to assess progress since commitments have been taken on the related issues.

#### Box 0.1: Evaluation of changes

The evaluation of changes for each indicator is usually made with reference to 2000 as the base year, in order to assess the changes which have occurred since the adoption of the EU strategy.

Evaluations do not include future projections. What is evaluated is not the sustainability<sup>(14)</sup> of the situation at any point in time, but the relative direction of changes since the adoption of the strategy, up to the latest year for which data are available, in the light of sustainable development objectives. It is therefore a relative, not an absolute, assessment.

The assessment is made on the basis of quantitative rules, to ensure a consistent approach across indicators and to avoid ad hoc value judgements. A change is assumed to be significant (favourable or unfavourable) if the mean annual rate of change is greater than 1 % in absolute terms. If it is between 0 and 1 % (positive or negative), it is assumed that there is no significant

change. When evaluating decoupling indicators, this quantitative rule is applied to the ratio of indicators concerned.

When there is a clear quantitative target associated with a policy objective, the distance to this target is taken into account in the evaluation. This is achieved by measuring progress achieved between 2000 and the latest year of data availability, as a proportion of progress that should have been achieved to meet the theoretical linear path. Under 50 % is evaluated as 'far from the target path' (unfavourable), 50-80 % is evaluated as 'insufficient change', above 80 % is evaluated as 'on target path' (favourable).

Weather symbols were chosen to illustrate that these evaluations are a relative assessment of progress and are therefore not definitive: a sun in one year (favourable change) may change to a cloud or thunderstorm in subsequent assessments if the rate of progress has not been sustained.

<sup>(14)</sup> It is useful to differentiate the concept of sustainable development from the concept of sustainability. 'Sustainability' is a property of a system. The focus is on maintaining a particular state of the system through time. The concept of sustainable development refers to a process, and puts more emphasis on the idea of change or development. The strategy aims to 'achieve continuous improvement of quality of life', and the focus is therefore on sustaining the process of improving human well-being. Rather than seeking a stable equilibrium, sustainable development is a dynamic concept, recognising that changes are inherent to human societies.



The inter-linkages section is meant to provide an illustration of the linkages between the different issues relevant to sustainable development. The linkages across the economic, social and environmental dimensions are particularly emphasised. The challenge of sustainable development is about becoming more aware of these linkages, and identifying the potential synergies and trade-offs that are an inherent part of individual actions and the policies of governments or international organisations. Once these links are identified, efforts can be devoted to minimising trade-offs and maximising synergies by choosing the appropriate actions and policies, at individual, regional, national, European and global levels. These are, however, complex issues, and knowledge is often limited. The inter-linkage sections are therefore not aimed at being comprehensive at this stage, but rather at providing examples for illustration. It should also be emphasised that there is not necessarily an empirical basis behind the links suggested. They could, however, be seen as hypotheses that could be further tested, for example on the basis of the data available in this report, and other data.

The individual indicators are then presented and analysed in a common format, introducing their definition, policy relevance, and analysis. The headline indicators are covered in more detail than the other indicators, presenting evolution over time as well as a country breakdown for the latest year available. The presentation is generally shorter for level 2 and 3 indicators, for which only the evolution over time is presented, and for a country breakdown the reader is referred to data on the SDI website. There are exceptions if data do not allow the presentation of an EU aggregate over time, or if the country breakdown is particularly useful for the analysis.

The breakdown of countries is also presented for level 2 and 3 indicators when the availability of data does not allow the compilation of an EU aggregate. In general, one or more graphs are provided to show the change in the indicator from 1990 as far as possible, or from the earliest year available after 1990.

Since space precludes the presentation of all data associated with each indicator, reference is made to the Eurostat SDI website for further information.

Methodological notes are provided at the end of each chapter.

### 4.2. Data coverage

This report seeks to cover as far as possible the set of indicators resulting from the review carried out by the SDI working group. However, as the final list of indicators was not yet adopted at the time of writing this report, the indicators presented here are inevitably the result of a compromise between the 2005 set and the final reviewed set.

Although only indicators for which data are available are fully described, indicators under development, as well as indicators to be developed are mentioned in the theme overview, under 'rationale for the selection of indicators'.

Since this report seeks to evaluate progress towards the EU sustainable development strategy, data are only presented for current EU Member States. Evaluations are provided for EU-27 and EU-15 aggregates as far as possible. Available data for candidate countries and countries of the European Economic Area are disseminated through the SDI website.

Most of the data used to compile the indicators come from the regular Eurostat collection of statistics from the European statistical system, but some data were extracted from databases outside Eurostat, either from other Commission services or from external sources. Data were extracted in early June. 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.



#### 4.3. Final considerations

Finally, some limits to the approach adopted in this report should be mentioned. The indicators adopted are imperfect, and do not always adequately monitor the issue of concern. They were chosen on the basis of the data currently available. In addition, since this report was being prepared while the SDIs were being reviewed, it was not possible for the revised SDI set to be fully incorporated into the 2007 Eurostat monitoring report. The set of indicators presented here therefore cannot be considered as sufficient information to provide a full and comprehensive analysis of all the trends relevant to sustainable development. Nevertheless, this report should be considered as a contribution to measuring the progress towards sustainable development at European level, based on commonly agreed indicators derived from official statistics, and thus providing one out of the many perspectives required in the search for a more sustainable development.



# Socioeconomic development

# 1

## **Strategy objective:**

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



## Policy Background

Economic prosperity is one of the key objectives of the EU sustainable development strategy. The strategy aims for a 'prosperous, innovative, knowledge-rich, competitive and eco-efficient economy, which provides high living standards and full and high-quality employment throughout the European Union'. In 2001, the Gothenburg European Council stated that to achieve sustainable development, 'strong economic performance must go hand in hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, preserving ecosystems and avoiding desertification'. More recently, in June 2006, the European Council added that sustainable development 'promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity'.

The theme 'socioeconomic development' highlights the social and economic dimensions of sustainable development and bridges it to the Lisbon process. In 2005, the European Council reaffirmed that the renewed Lisbon strategy should be seen in the wider context of sustainable development. While focusing mainly on actions related to sustaining economic growth and developing more and better jobs, the Lisbon strategy makes an essential contribution to the wider objective of sustainable development (see Box 1.1).

<sup>(15)</sup> Integrated guidelines for growth and jobs (2005-08), COM(2005) 141.

The integrated policy guidelines <sup>(15)</sup>, a key document within the revised Lisbon strategy, underline the link between the Lisbon programme (Box 1.2) and sustainable development. They highlight that long-term growth depends on addressing a range of resource and environmental challenges which, if left unchecked, will act as a brake on future growth. For instance, the synergies between growth and sustainable development in the field of environment include giving priority to energy efficiency, promoting renewable energies, decoupling economic growth from environmental degradations (as in transport), promoting sustainable use of land, water and other resources.

### Box 1.1: Making use of synergies between the EU sustainable development strategy and the Lisbon strategy for growth and jobs

'The EU SDS and the Lisbon strategy for growth and jobs complement each other. The SDS is primarily concerned with quality of life, intra- and inter-generational equity and coherence between all policy areas, including external aspects. It recognises the role of economic development in facilitating the transition to a more sustainable society. The Lisbon strategy makes an essential contribution to the overarching objective of sustainable development focusing primarily on actions and measures aimed at increasing competitiveness and economic growth and enhancing job creation.

The EU SDS forms the overall framework within which the Lisbon strategy, with its renewed focus on growth and jobs, provides the motor of a more dynamic economy. These two

strategies recognise that economic, social and environmental objectives can reinforce each other and they should therefore advance together. Both strategies aim at supporting the necessary structural changes which enable the Member States' economies to cope with the challenges of globalisation by creating a level playing field in which dynamism, innovation and creative entrepreneurship can flourish whilst ensuring social equity and a healthy environment.

In this context the EU SDS recognises that investments in human, social and environmental capital as well as technological innovation are the prerequisites for long-term competitiveness and economic prosperity, social cohesion, quality employment and better environmental protection.'



## Main changes

**Table 1.1: Evaluation of changes in the socioeconomic development theme (from 2000)** <sup>(16)</sup>

	EU-27	EU-15
<b>GDP per capita</b>		
<b>Economic development</b>		
Dispersion of regional GDP		:
Investment	*	
Household saving		:
<b>Innovation, competitiveness and eco-efficiency</b>		
Labour productivity	*	
International cost competitiveness		:
R&D expenditure		
Energy intensity		
<b>Employment</b>		
Total employment		
Female employment		
Dispersion of regional employment rates		
Unemployment		



**LEGEND:**

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available
- \* refers to EU-25

<sup>(16)</sup> Dispersion of regional GDP, household saving, and international cost competitiveness were not evaluated for EU-15 as aggregates are no longer produced at this level.

Compared with the situation observed in 2000, the trends registered under this theme are mixed, with some encouraging signs in several areas, but unfavourable trends in others. Economic growth has been relatively weak since 2000 but recent upturns resulted in an annual average growth well above 1 %. Productivity growth has followed a positive trend but price competitiveness has deteriorated. Progress in R & D expenditure and employment rates are not sufficient to reach the respective targets, but the rate of growth in female employment has been sustained enough for the 2010 target to be within reach.

In the second half of the 1990s, the performance of the EU-27 economy was relatively positive, with a growth rate of GDP per inhabitant in 2000 at more than 3 %. However, the Union's economy suffered from several shocks which translated into a deceleration of economic activity between mid-2000 and mid-2003. Since then there have been some encouraging upturns in the EU economy particularly in 2006 with a 2.8 % growth rate. Overall, the dispersion rate of GDP per inhabitant in the EU-27 decreased between 2001 and 2004. After a decline from 2000 to 2005, investment as a percentage of GDP is nearly back to its 2000 level. There was no major change in household saving, with a minor change from 11.3 % of gross disposable income in 2000 to 11.2 % in 2006.

**Some recent upturns after a weak economic growth**



### Sluggish growth in labour productivity

The growth rate of labour productivity, although still positive, dropped from 2.8 % in 2000 to 1 % in 2005 in the EU-15, resulting in an average annual growth rate of 1.2 %. Figures available for the EU-25 indicate a more sustained level of growth between 2001 and 2004, 1.6 % per year on average. This sluggish growth in labour productivity was accompanied by a loss of international cost competitiveness between 2000 and 2007 in the EU-27, with a strong increase in the real effective exchange rate of 4.2 % per year on average, mainly due to an appreciation of the euro exchange rate during this period.

### Investment in R & D insufficient to reach target

Labour productivity was not boosted by investment in the knowledge-based economy: investment in research and development in terms of percentage of GDP stagnated between 2000 and 2005, standing at 1.9 % in 2005 in the EU-15 and 1.4 % in the EU-25, far from the EU target of 3 % of GDP by 2010. On the other hand, the increase in EU-25 lifelong learning from 7.5 % in 2000 to 9.6 % in 2006 in the EU-25, is encouraging in the light of the Barcelona target of reaching 12 % by 2010 (see social inclusion chapter).

### Eco-efficiency: decrease in energy intensity below expectations

While energy intensity decreased substantially between 1995 and 2000, decline has been much slower since 2000, well below earlier expectations of 1 % decrease per year.

### Employment growth is insufficient to meet target, but disparities are decreasing

If the second half of the 1990s saw a strong growth in employment, since 2000 the trend has been insufficient to reach the intermediate Lisbon employment rate target of 67 % in 2005. However, the female employment rate has grown in a positive way, with the 2005 target in the EU-15 exceeded, and almost reached in the EU-27. The employability of European workers appears to be strongly driven by educational attainment with employment rates varying by more than 30 percentage points between the least and the most skilled workers. Regional disparities have clearly decreased since 2000.

### Unemployment is decreasing, particularly for women but less for the young

Following a slight increase in the early 2000s, unemployment decreased in 2005 and 2006, resulting in an overall decrease of 0.7 percentage points between 2000 and 2006. This benefited particularly women (1.1 points decrease), while the decrease for younger people was lower (0.4 point decrease). Both groups are still more vulnerable, 8.8 % of women and 17.4 % of young people being unemployed in 2006, compared to a total employment rate of 7.9 %.

#### Box 1.2: The Lisbon programme

The Community Lisbon programme (CLP) <sup>(17)</sup> defines three main areas for action:

- (making Europe) a more attractive place to invest and work:
  - extend and deepen the internal market,
  - improve European and national regulation,
  - ensuring open and competitive markets inside and outside Europe,
  - expand and improve European infrastructure;
- knowledge and innovation for growth:
  - increase and improve investment in research and devel-

opment,  
facilitate innovation, the uptake of ICT and the sustainable use of resources,  
contribute to a strong European industrial base;

- creating more and better jobs:
  - attract more people into employment and modernise social protection systems,
  - improve the adaptability of workers and enterprises and the flexibility of labour markets,
  - invest more in human capital through better education and skills.

<sup>(17)</sup> Community Lisbon programme: Technical implementation report 2006, SEC(2006) 1379.



## Rationale for the selection of indicators

The indicators in this theme have been selected to provide a comprehensive overview of the evolution of the European economy and society, in particular in the main policy issues and priorities highlighted in the sustainable development strategy. Their distribution amongst the three subthemes economic development, innovation, competitiveness and eco-efficiency as well as employment illustrates the importance of these issues on the EU's agenda. As the Lisbon strategy and the sustainable development strategy complement each other, the indicators, particularly in this chapter, overlap to some extent with the set of structural indicators, which monitor the Lisbon strategy (see Box 1.3).

### Box 1.3: The structural indicators as a support to the Lisbon strategy on growth and jobs

The Lisbon European Council in March 2000 invited the Commission to draw up an annual report on the progress made towards the Lisbon objectives 'on the basis of structural indicators to be agreed relating to employment, innovation, economic reform and social cohesion' in order to provide an objective assessment of the effects of the structural reforms implemented by the Member States to raise their growth and employment potential, while at the same time supporting the key messages of the report.

Following this request, a set of 35 indicators was adopted in December 2000. In 2001, the set was revised, and a new area on environment, added. In 2002, it was extended to 42 structural indicators, covering the areas employment, innovation and research, economic reform, social cohesion and environment as well as the general economic background. In 2004, a shortlist of 14 structural indicators was presented for the first time, allowing for a more concise presentation and a better assessment of

achievements over time vis à vis the Lisbon agenda. In 2005, the Commission presented a new approach to the Lisbon strategy focusing on growth and jobs. In December 2006, the Commission adopted a small revision of the set of structural indicators with the inclusion of four additional indicators: implicit tax rate on labour, implicit tax rate on energy, combined heat and power generation, and resource productivity.

In the same way as the Lisbon and the sustainable development strategies have common objectives and serve the same overarching goal of sustainable development, the set of sustainable development indicators is closely connected to the set of structural indicators (SIs). A number of indicators are common to both lists, which reflect the cross-cutting nature of both strategies. They are highlighted in this report with the SI logo. The SIs cover the six domains of: economic background, employment, innovation and research, economic reform, social cohesion, and environment.

The headline indicator for this theme is the 'growth rate of GDP per inhabitant'. Even if a wide range of factors contributes to socioeconomic development, the gross domestic product (GDP) is a widely used measure of the overall economic performance and standard of living of a society. The growth rate of GDP measures the dynamism of the economy. However, it should be recognised that it is not just the growth rate of GDP that is important, but its absolute level, and the quality of development.

The other indicators focus on the main challenges to be faced by the Union for attaining balanced economic growth, and are split into the following subthemes:

- **Economic development:** the 'dispersion of regional GDP per inhabitant' to measure regional disparities completes the headline indicator. Other indicators look at 'investment', which is inter-dependent with the economy's growth capacity and a key to increasing productivity, and 'saving', which gives an indication of what is left from disposable income for future consumption and investment. An indicator on 'net national income' is not presented here, and the feasibility of an indicator on 'genuine savings' within this subtheme will also be explored;
- **Innovation, competitiveness and eco-efficiency:** the renewed strategy underlines that 'investments in human, social and environmental capital as well as technological innovation are the prerequisites for long-term competitiveness and economic prosperity...'. Trends in competitiveness are assessed through 'labour productivity per hour worked'. Progress in the levels of investment in knowledge and technology is measured through



an indicator on 'R & D expenditure', and an additional indicator on 'innovation' which is not reported here due to insufficient time series to evaluate its evolution. Investment in human capital in terms of 'lifelong learning' and 'public expenditure on education' is reported on in the social inclusion chapter. Increases in eco-efficiency can be an important factor in long-term competitiveness, and are monitored here through an indicator on 'energy intensity', which should be completed in the future by an indicator on the 'effects of innovation on material and energy efficiency'. The combination of these factors provides insights into how competitiveness may be affected in the future. A potential indicator on 'eco-innovations' will also be investigated within this subtheme;

- **Employment:** employment is a key economic and social indicator as it contributes to economic performance, quality of life and social inclusion, which are among the final objectives of sustainable development. Sustainable growth should lead to a quantitative and qualitative rise in employment and vice versa. Therefore a special focus is on employment and unemployment in the European Union, analysed in terms of total, by gender, by age and by level of education, as well as in terms of regional disparity. Long-term unemployment aspects are covered in the social inclusion chapter.

### Potential linkages

#### Linkages within socioeconomic development

Issues within this theme are strongly interlinked. For example, investment is likely to influence competitiveness and employment as it would be expected to result in the creation of jobs if more oriented towards deployment of new investment goods rather than on a mere replacement of existing stocks. Employment growth contributes to GDP growth. An increase in labour productivity is likely to influence employment, both qualitatively and quantitatively.

#### Linkages with social issues

There are also strong links with the social dimension of sustainable development. For example, economic growth can provide additional economic resources to alleviate poverty, to invest in high quality education, or to contribute to the sustainability of public finances.

As exclusion from the labour market is a major factor of social exclusion, an increase in employment is likely to reduce poverty. On the other hand, the level of education and lifelong learning, along with R & D expenditure and innovation, can be considered as an investment in human capital and are expected to increase labour productivity. An increase in employment amongst older workers is also likely to have an impact on debt and pension expenditure, underlining links with the demographic changes themes.

#### Linkages with environment and health

The link with the environment dimension is key to the objective of sustainable development. Economic growth can provide additional economic resources to invest in primary health care services and pollution abatement technologies. Well-targeted research and development expenditure is vital for the implementation of new modes of production and consumption, with impacts on the use of natural resources, on the generation of waste, and on pollution. Some studies also suggest that a higher GDP may be linked to preferences for greener products and more concern for the environment.

On the other hand, one would expect economic growth to reflect an increase in production and consumption, and therefore, all other things being equal, a more intensive exploitation of resources. Hence, sustainable development relies on promoting the decoupling of economic growth from environmental degradation, through environmental technologies and innovations and changes in production and consumption patterns. The socioeconomic development theme is therefore closely linked to the sustainable consumption and production theme.

An increase in eco-efficiency driven by environmental considerations can also increase long-term EU competitiveness; corporate and social responsibility can also increase labour productivity.

If not counterbalanced by an increase in resource productivity, economic growth can have a detrimental impact on transport, energy, and climate change. On the other hand, higher economic growth, targeted investment and innovation may result in better technology to make the production and transport system more energy efficient, thus helping to mitigate climate change.

Linkages with  
climate change,  
energy and  
transport

A higher GDP per inhabitant, at current levels of technology, may lead to increased imports of materials from abroad, with a detrimental environmental impact on developing countries. On the other hand, it may free resources to increase aid that can be targeted towards global sustainable development.

Linkages with  
global partnership

#### Further reading on socioeconomic development in Europe:

A year of delivery — Implementing the renewed Lisbon strategy for growth and jobs, COM(2006) 816

*Employment in Europe 2006*, European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, 2006

Economic reforms and competitiveness: key messages from the European competitiveness report 2006, COM(2006) 697

Time to move up a gear — the new partnership for growth and jobs, COM (2006) 30

Integrated guidelines for growth and jobs (2005-08), COM(2005) 141



## Headline indicator

## GDP per inhabitant

**Definition:** The indicator is defined as the **real growth rate of gross domestic product (GDP) per inhabitant**. It is measured at 1995 prices and exchange rates. GDP is a measure of economic activity, defined as the value of all goods and services produced less the value of any goods or services used in their creation.



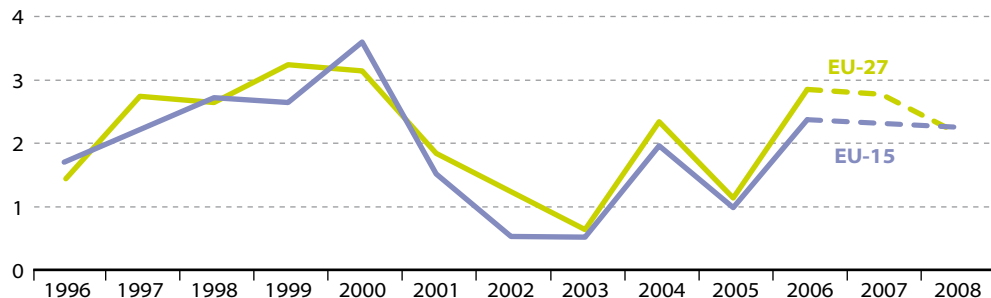
## Indicator relevance

While the level of GDP (per inhabitant) is a widely used measure of economic performance and the standard of living of a society, the growth rate of GDP is a measure of the dynamism of the economy, of its ability to catch up with other, richer economies, and its capacity to create new jobs. The growth rate is calculated from figures at constant prices since these give volume movements only (price movements will not inflate the growth rate). A sufficiently high GDP growth rate means that society is generating additional economic resources to meet the (growing) economic needs of the present generation, to invest in view of higher returns in the future, or to address social and environmental concerns. It is however important to emphasise that, if GDP per inhabitant is a proxy of citizens' material wealth, it cannot be considered as a holistic measure of their well-being as for instance it does not capture the value of non-marketed services which are essential to their well-being. For instance, a growing production can generate pollution or health problems that lead to an increase in various expenditures, both having a positive impact on the GDP, but not contributing to the quality of life.

**Figure 1.1. Growth rate of real GDP per inhabitant (%)**

NB: Figures from 2007 onwards are forecasts from the Directorate-General for Economic and Financial Affairs.

Source: Eurostat.



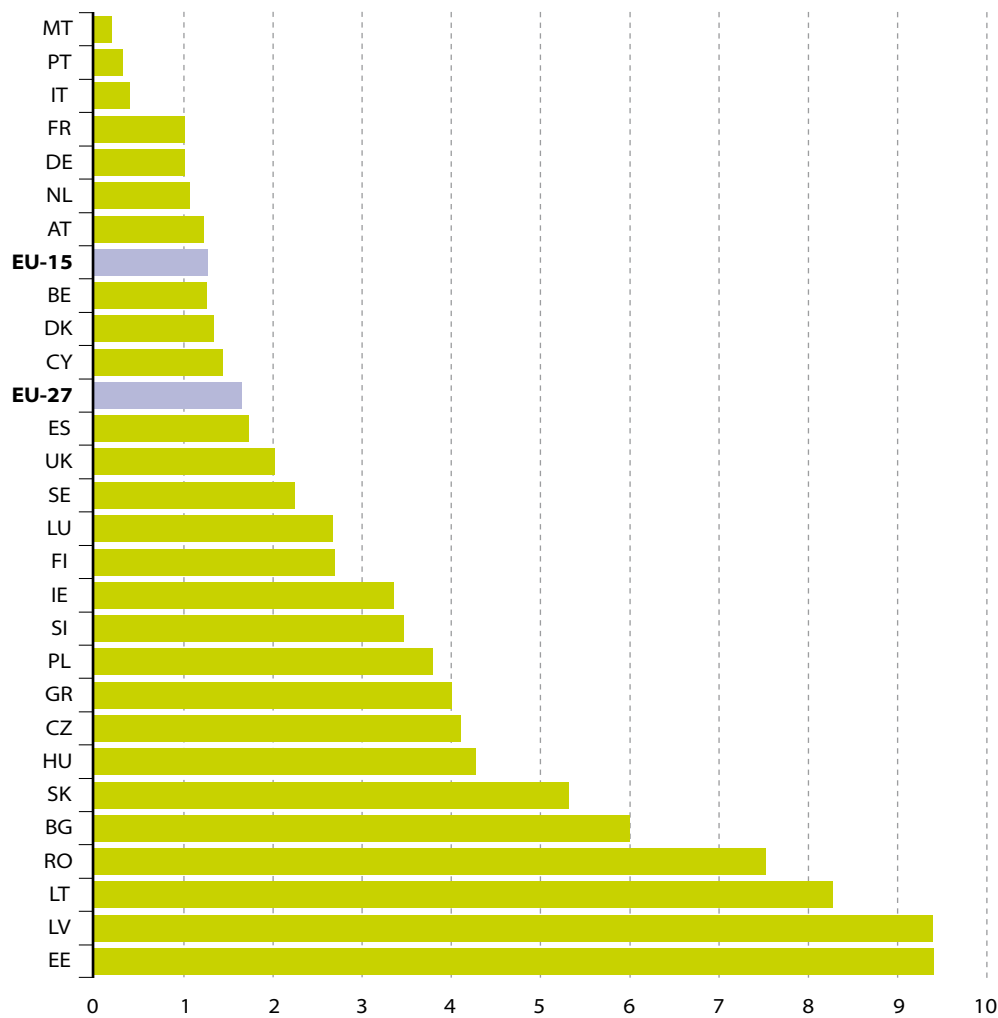
## Analysis

From 2000 to 2003, the Union's economy was affected by a series of economic and other shocks<sup>(18)</sup>. In general, the EU economic performance between 2000 and 2006 was relatively modest, despite some upturns, in particular a 2.8 % growth in 2006, resulting in an average annual growth of 1.6 % in the EU-27 (1.3 % in the EU-15), compared to respectively 2.9 and 2.8 % on average between 1996 and 2000. This translates a certain difficulty to catch up with the sustained growth rates that prevailed between the mid 1990s and 2000.

The relative upturns observed in 2004 and 2006 can be partly attributed to favourable cyclical developments, but according to the 2006 Lisbon annual progress report<sup>(19)</sup> there is also evidence that it is partly due to the impact of previous structural reforms. The report also argues that it is supported by budgetary consolidation and a greater focus on the need to secure sustainable public finances in the light of ageing populations, and that the recent enlargement also contributed to greater dynamism in the EU economy.

<sup>(18)</sup> Commission staff working document in support of the report from the Commission to the spring European Council, 22-23 March 2005, on the Lisbon strategy of economic, social and environmental renewal, SEC(2005) 160.

<sup>(19)</sup> A year of delivery — Implementing the renewed Lisbon strategy for growth and jobs, COM(2006) 816.



**Figure 1.2.**  
Real GDP per inhabitant  
(2000-2006 Average annual growth rate)  
(%)

Source: Eurostat.

Average growth rates between 2000 and 2006 show much higher growth, in some new Member States, particularly in Estonia, Latvia, Lithuania, Romania, where average growth rates have been higher than 7 %, well above the EU average, due in particular to high export rates. This higher growth should contribute to a progressive shrinking of the difference in wealth between new and old Member States.



## Economic development

## Dispersion of regional GDP per inhabitant

**Definition:** For a given country, the dispersion of regional GDP is defined as the **sum of the absolute differences between regional and national GDP per inhabitant** (measured at current market prices), at NUTS level 3, weighted with the regional share of population and expressed in per cent of the national GDP per inhabitant.

The value of the dispersion of GDP per inhabitant is zero, if the values of regional GDP are identical in all regions of the country or economic area (such as EU-27), and it will show, *ceteris paribus*, an increase, if the differences between the values of regional GDP per inhabitant among regions are rising.



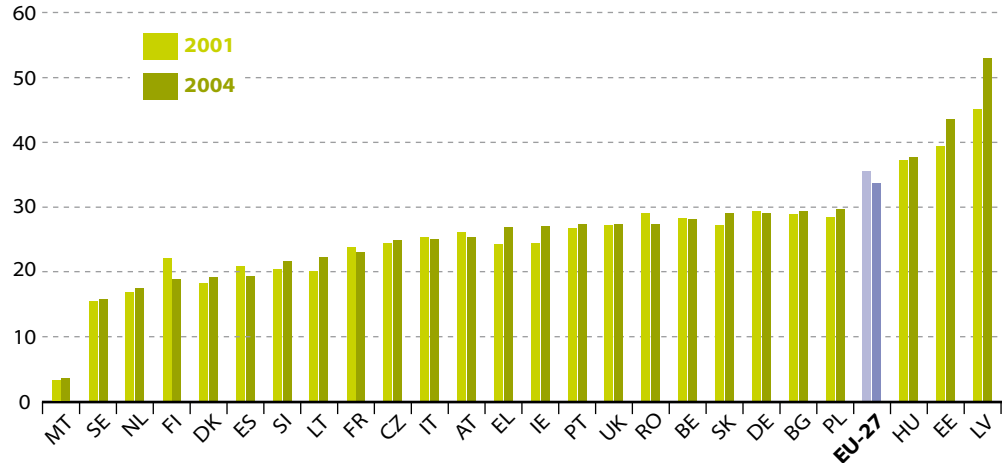
### Indicator relevance

Regional GDP is used in order to measure the degree of economic development of regions. Decreasing regional disparities is an important goal of the European Union and an objective of the sustainable development strategy, which aims for 'a high level of social and territorial cohesion at EU level and in the Member States as well as respect for cultural diversity'. The Agenda 2000 reform of the Structural Funds focuses on three priority objectives, of which Objective 1 promotes the catching-up of the economies of regions whose development is lagging behind. Only those with per inhabitant GDP less than 75 % of the Community average are eligible. Basic infrastructures, the development of human resources, investment in research and innovation, and the information society are the four main priority areas.

**Figure 1.3.**  
Dispersion of regional GDP per inhabitant at NUTS level 3 (%)

NB: Excluding Cyprus and Luxembourg, which are not divided into NUTS regions.

Source: Eurostat.



### Analysis

The distribution of wealth amongst the regions of EU countries appears to be more uneven in some new Member States. In 2004, the four highest rates of dispersion of regional GDP were found in Latvia, Estonia, Hungary and Poland, while Bulgaria came fifth at the same level as Germany. In these countries, the rapid transition to a market economy has given rise to high levels of income discrepancies. Moreover, the level of disparity among the new Member States for which the indicator can be calculated has systematically increased since 2001 except in Romania. The lowest rate of disparity was found in Malta in 2004 (with only two regions), and amongst the old Member States, in Sweden, the Netherlands, and Finland. Overall, the dispersion rate decreased in the EU-27 by 1.8 percentage points between 2001 and 2004.





## Investment

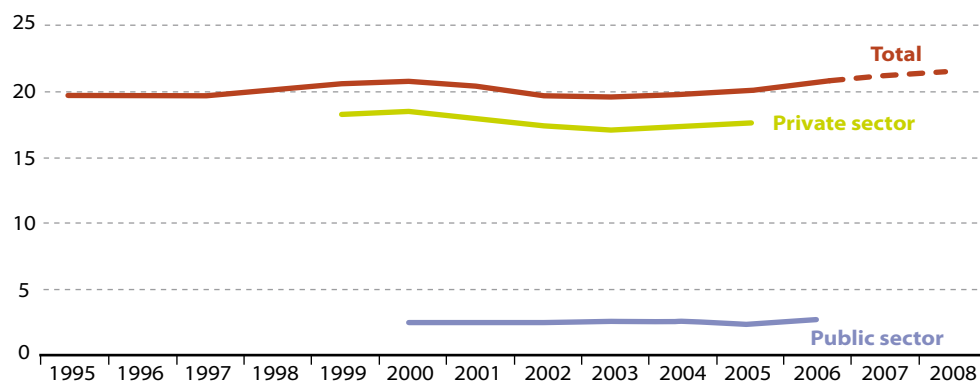


**Definition:** This indicator is defined as **total gross fixed capital formation (GFCF) expressed as a percentage of GDP**, for the public and private sectors. GFCF consists of resident producers' acquisitions, less disposals of fixed assets plus certain additions to the value of non-produced (usually natural) assets realised by productive activity. GFCF includes acquisition less disposals of, e.g. buildings, structures, machinery and equipment, mineral exploration, computer software, literary or artistic originals. It also includes certain additions to the value of non-produced assets realised by productive activity, covering mainly improvements to land, such as draining of marshes.

The indicator gives the share of GDP that is used for gross investment (rather than being used for e.g. consumption or exports). Acquisitions of capital goods such as buildings, machinery and transport equipment by both private and public sectors determine to a large extent the future economic performance of a society by deepening and widening the capital stock, whether physical capital stock or knowledge. Therefore, together with rising labour supply, it directly impacts on potential growth rates. From a sustainable development perspective, investments in more environmentally friendly technologies are crucial to improve eco-efficiency.

The indicator is also subject to multiplier effects in which an increase in investment produces an increase in national income and consumption greater than the initial amount spent. For example, if a corporation builds a factory, it will employ construction workers and their suppliers as well as those who work in the factory. Indirectly, the new factory will stimulate employment in, for example, laundries, restaurants, and service industries in the factory's vicinity.

### Indicator relevance



**Figure 1.4. EU-25 investment, by institutional sector (% of GDP)**

*NB:* total investment figures from 2007 onwards are forecasts from the Directorate-General for Economic and Financial Affairs.

Source: Eurostat.

Investment spending has seen a continuous upward trend until 2000 due to a large extent to the optimism surrounding the ICT sector. After the bursting of the ICT bubble and the ensuing global downturn, investment spending experienced a period of cutback. As a whole, however, over the last 10 years, investment spending has remained roughly constant at around 20 % of GDP <sup>(20)</sup>.

### Analysis

<sup>(20)</sup> The EU economy: 2006 review. Adjustment dynamics in the euro area, experiences and challenges, Directorate-General for Economic and Financial Affairs.



Investment spending is typically a strongly cyclical and volatile component of GDP growth. The investment behaviour of firms in particular depends on their overall confidence in the future based on objective criteria such as developments in their production and order books and more subjective criteria such as expectations of employment, selling prices, returns and cost of capital, especially interest rates <sup>(21)</sup>.

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<sup>(21)</sup> Adapted from The EU economy: 2006 review, op.cit.

As a result of these inter-annual movements, investment declined from 20.6 % to 19.9 % between 2000 and 2005 in the EU-25, before a recovery to 20.5 % in 2006, almost back to the same level as in 2000. The negative trend between 2000 and 2005 is ascribable to a decline in business investment (by far the largest part of total investment) from 18.3 to 17.4 %. This drop was not compensated by public investment which grew from 2.3 % in 2000 to 2.4 % in 2003 and 2004, and then went down again to 2.2 % of GDP in 2005.

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<sup>(22)</sup> Business and consumer survey, European Commission, Directorate-General for Economic and Financial Affairs.

Total investment is forecasted to recover to an average growth rate of 2.4 % during the three-year period from 2006 to 2008, to some extent due to the expected restored confidence of firms in the near future <sup>(22)</sup>, and to the availability of resources via the new regulatory framework for the Structural Funds for 2007-2013 which should translate into more investment <sup>(23)</sup>.

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<sup>(23)</sup> A year of delivery — Implementing the renewed Lisbon strategy for growth and jobs, COM(2006) 816.



## Household saving

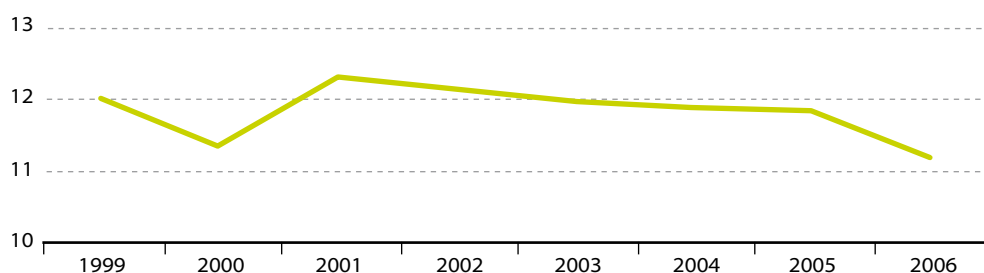


**Definition:** The indicator is defined as the **share of gross saving in total gross household disposable income**.

Gross saving measures the portion of disposable income not used for final consumption. Gross disposable income represents the total primary income receivable by resident institutional units in return for some engagement in productive activity, plus the balance of current transfers with the rest of the world. See methodological notes for a definition of the household sector.

Saving measures that part of income that is not used on consumption and may therefore be used for investment or capital transfers to the rest of the world. Household saving, which constitutes the largest part of total saving, provides information on changes in the household sector's capacity for future consumption.

The flow of current savings also represents financial resources that can be allocated to modify the levels of the productive, natural and human capital stocks, upon which ultimately depends future generations' welfare. In contrast, non-marketed environmental and social functions and services are not reflected in aggregated monetary indicators. To assess sustainability, trends in saving indicators must therefore be analysed together with the non-monetised indicators of this report accounting for the net depletion of natural resources and for the accumulation of human capital.



**Figure 1.5. EU-27 gross household saving (% of gross household income)**

Source: Eurostat.

Since a relative peak in 2001 at 12.3 %, the gross household saving rate has slightly decreased in the EU-27 to 11.2 %, i.e. approximately the same level as in 2000, when it was at 11.3 %. Low interest rates (both nominal and real) have led to an increased credit demand by EU consumers which has led to a reduced tendency to save money in a majority of countries.

There are significant differences across EU countries. Amongst EU-27 countries for which data were available, the lowest level of household saving share in gross disposable income were recorded in 2005 in Latvia (1.1 %), Lithuania (1.5 %) and Denmark (2.5 %) whilst the highest rates exceeded 15 % in Germany (16.3 %), Italy (15.9 %), Ireland (15.1 %) and in France (15.0 %), see country breakdown on the SDI website.

Short-term increases of the household saving rate are often linked with pessimistic expectations about the economic future. They are generally driven by changes in the labour market or interest rate movements. Any precautionary saving attitude may have been led by a number of factors including higher uncertainty due, inter alia, to geopolitical tensions, lack of clarity about the timing and size of some structural reforms, in particular on pension and health care systems, and an overestimation of actual inflation rate, leading to reduced consumption, or in some Member States the strong rise in house prices <sup>(24)</sup>.

### Analysis

<sup>(24)</sup> The EU economy: 2006 review, op.cit.



## Innovation, competitiveness and eco-efficiency



## Labour productivity

**Definition:** Labour productivity is expressed as the annual percentage change on the previous year of **GDP per hour worked at 1995 constant prices**.

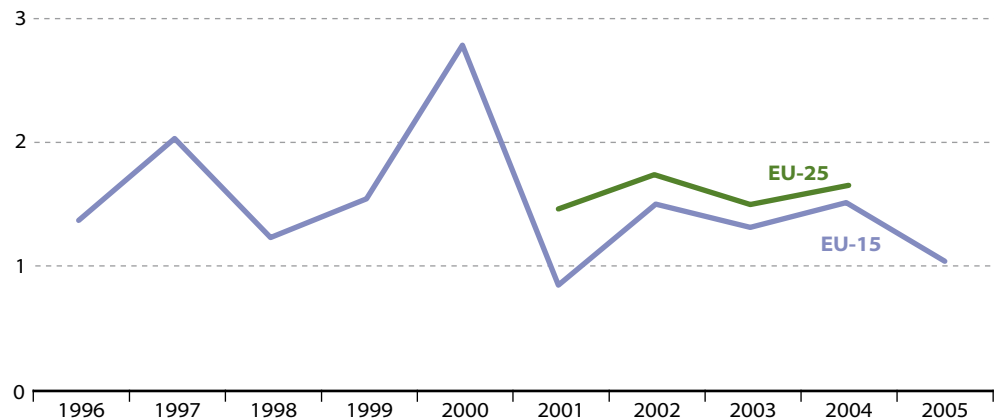


## Indicator relevance

The indicator is intended to give a picture of the competitiveness of national economies over time. The EU suffers from a declining growth in labour productivity which affects competitiveness and the whole economy, especially employment. As long as GDP grows and the population of employed persons is relatively stable, this index will also inevitably grow, indicating that one hour of labour produces more output than in previous years. In terms of the development of international competitiveness it is the rate of growth which is of interest.

**Figure 1.6: Labour productivity at constant 1995 prices, per hour worked (annual % change)**

Source: Eurostat.



## Analysis

The growth in labour productivity remained fairly stable in the EU-25, around 1.6 % between 2001 and 2004. In the EU-15, the average growth rate was 1.2 % during the period from 2000 to 2005, equivalent to the average pace registered between 1996 and 1999. The year 2000 reveals a large growth at 2.8 % which was followed by a slowing down to 0.8 % in 2001. Growth was more sustained in the three years from 2002 to 2004 but 2005 saw a new slowdown to 1.0 %. This declining growth rate can be explained in equal parts by a lower investment per employee, a slowdown in the rate of technological progress stemming from the slow reorientation to high productivity growth sectors, and the relatively small size of the EU's information and communication technology (ICT) production industry <sup>(25)</sup>.

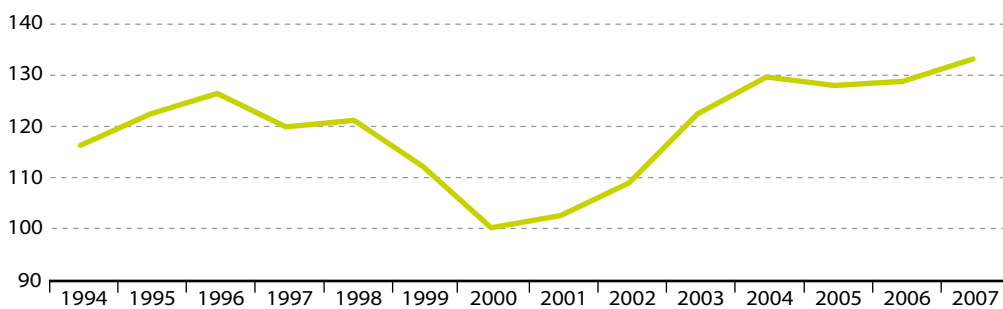
<sup>(25)</sup> Second report on the implementation of the 2003-2005 broad economic policy guidelines, *European Economy* No 1/2005, Directorate-General for Economic and Financial Affairs.

## International cost competitiveness



**Definition:** The **real effective exchange rate (REER)** can be obtained by deflating the nominal effective exchange rate (NEER) by a weighted price index or a weighted cost index. The NEER is a measure of the global value of a currency as it is a weighted average of its exchange rates versus several foreign currencies. This specific indicator is deflated by nominal unit labour costs in total economy against a panel of 36 industrialised countries (EU-27 plus Australia, Canada, United States, Japan, Norway, New Zealand, Mexico, Switzerland and Turkey). Double export weights are used to calculate effective exchange rates, reflecting not only competition in the home markets of the various competitors, but also competition in export markets elsewhere.

This indicator is used to assess a country's (or currency area's) cost competitiveness relative to its principal competitors in international markets. Changes in cost competitiveness depend not only on exchange rate movements but also on relative cost trends. A rise in the index indicates a loss of competitiveness.



### Indicator relevance

**Figure 1.7:** EU-27 real effective exchange rate (index 2000=100)

Source: European Commission, Directorate-General for Economic and Financial Affairs.

After a peak in 1996 and a trough in 2000, the REER has been rising steadily over the last years in the EU-27 to reach a new peak at 129.7 points in 2004, followed by a period of quasi-stability until a new significant raise to 132.9 points in 2007. This represents an average annual decrease of the index of 2.5 percentage points from 1994 to 2000, and an average increase of 4.2 percentage points per year from 2000 to 2007. The introduction of the euro on 1 January 1999 was followed by a period of strong depreciation of its exchange rate. This trend was reversed in 2002. Since then, the euro exchange rate has appreciated significantly both in real and nominal terms, driving a deterioration in cost competitiveness. In the first quarter of 2007, the euro exchange rate stood more than 14 % above its 1995 to 2006 average <sup>(26)</sup>.

In some cases, deviating price and cost trends among euro area Member States could lead to an accumulation of competitive imbalances which might ultimately hamper economic growth and therefore cause unemployment in individual Member States. In the long term, changes in relative prices and costs may be justified by changes in economic fundamentals related, for example, to a catching-up in the level of economic development, changes in non-price competitiveness factors, or changes in underlying savings and investment patterns <sup>(27)</sup>.

### Analysis

<sup>(26)</sup> Based on quarterly data on price and cost competitiveness of the European Union and its Member States, Directorate-General for Economic and Financial Affairs, First quarter of 2007, [http://ec.europa.eu/economy\\_finance/publications/priceandcostcompetitiveness\\_en.htm](http://ec.europa.eu/economy_finance/publications/priceandcostcompetitiveness_en.htm)

<sup>(27)</sup> See quarterly data on price and cost competitiveness of the European Union and its Member States, Directorate-General for Economic and Financial Affairs, First quarter of 2005 [http://ec.europa.eu/economy\\_finance/publications/priceandcostcompetitiveness\\_en.htm](http://ec.europa.eu/economy_finance/publications/priceandcostcompetitiveness_en.htm)



## Innovation, competitiveness, and eco-efficiency



## Research and development expenditure

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



## Indicator relevance

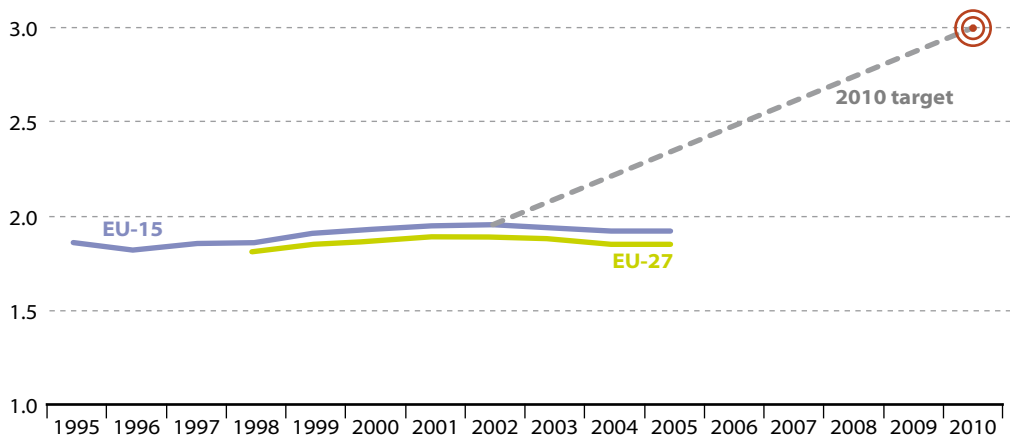
<sup>(28)</sup> Proposed standard practice for surveys on research and experimental development (Frascati Manual), sixth edition, OECD (2002), Section 6.3.

R & D aims to increase the stock of knowledge and the use of this stock to devise new applications <sup>(28)</sup>. New technologies and organisational techniques are necessary complements to changing behaviour to achieve the shift towards a sustainable society. Research is also needed to identify the unsustainable trends, measure them, and investigate how they can be addressed as effectively as possible. Experimental development is crucial to transform knowledge into an operational mode in order to make changes happen. Recently, the 2006 sustainable development strategy has identified R & D as one of the two 'cross-cutting policies contributing to the knowledge society' and stressed 'the positive role of technology for smart growth', while highlighting the 'need for further research in the interplay between social, economic and ecological systems'.

Research and development expenditure is also an essential feature in the Lisbon strategy, for making the transition to a knowledge-based economy as well as for improving production technologies and stimulating growth. In 2002, the Barcelona European Council set the EU a target of increasing R & D expenditure to 3 % of GDP by 2010, and all EU-25 countries have now set national targets.

**Figure 1.8.**  
Gross domestic expenditure on research and experimental development (% of GDP)

Source: Eurostat.



## Analysis

In the years from 1995 onwards, the share of gross domestic expenditure on R & D in the GDP remained fairly stable in the EU-15, rising from 1.85 % in 1995 to 1.92 % in 2000, down to 1.91 % in 2005. In the EU-27, the share decreased from 1.86 % in 2000, to 1.84 % in 2005. This still represents a distance of more than 1 percentage point to the 2010 3 % target, implying that national R & D investment targets are likely to remain out of reach for most Member States. Only Finland and Sweden had more than 3 % of GDP as expenditure for R & D in 2006. The new Member States are still lagging behind, the lowest shares being found in Romania with 0.39 % in 2004, and Cyprus with 0.40 % in 2005 (see country breakdown on the SDI website).

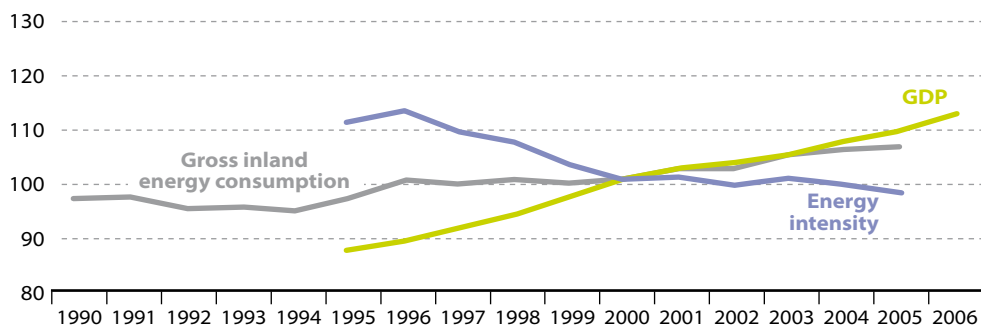
## Energy intensity



**Definition:** Total energy intensity is the **ratio between the gross inland consumption of energy and the gross domestic product (GDP)** calculated for a calendar year. The GDP figures are taken at constant prices to avoid the impact of inflation.

The renewed strategy aims to promote a 'prosperous, innovative, knowledge-rich, competitive, and eco-efficient economy'. Energy intensity monitors how much energy is used to produce one unit of economic output, and measures one aspect of eco-efficiency by identifying to what extent there is a decoupling between energy consumption and economic growth. Energy intensity evolves according to changes in energy efficiency, changes in fuel mix, and economic structural changes.

Although there is no quantified objective set in the EU sustainable development strategy for energy intensity, in 1998 the Commission proposed an indicative community-wide target of an additional 1 % annual reduction in energy intensity to the year 2010, over and above trends of previous years<sup>(29)</sup>. This proposal was endorsed by the Council in its resolution of 7 December 1998 on energy efficiency in the European Community. More recently, the 2006 directive on energy end-use efficiency and energy services<sup>(30)</sup> provided an indicative target of 9 % of national energy savings in 2016, compared to 2008. The 2007 European spring Council also stressed the need to increase energy efficiency in the EU so as to achieve the objective of saving 20 % of the EU's energy consumption compared to projections for 2020. The Commission's action plan for energy efficiency<sup>(31)</sup> outlines a framework of policies and measures to achieve this objective.



### Indicator relevance

<sup>(29)</sup> Energy efficiency in the European Community — Towards a strategy for the rational use of energy, COM(1998) 246.

<sup>(30)</sup> Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC (OJ L 114, 27.4.2006, pp.64-85).

<sup>(31)</sup> Action Plan for Energy Efficiency: Realising the Potential, COM(2006) 545.

**Figure 1.9. EU-27 energy intensity of the economy, GIC, and GDP at constant prices (index 2000=100)**

Source: Eurostat.

Following a period of steady consumption between 1990 and 1995 in the EU-27, gross inland energy consumption grew at an average rate of 0.7 % per year between 1995 and 2000, much slower than the average GDP growth of 2.8 % per year. As a result energy intensity decreased at the rate of 2 % per year on average over this period.

Since then, the average annual growth rate in gross inland consumption almost doubled, to 1.2 %, whilst GDP growth has been sluggish at an average of 1.7 % per year, leading to a much slower rate of decline in energy intensity of 0.5 % per year on average. This is well below the -1 % target, indicating that the potential for energy efficiency improvements identified in 1998 has not been realised.

### Analysis



## Employment



## Employment

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

The total employment rate by gender and by highest level of education attained is defined as: (1) the share of men, respectively, women aged 15 to 64 in employment in the total population of the same age and gender group, (2) the share of employed people within age group 25-64 years having attained a specific level of education in the total population of the same age group. See methodological guidelines for level of education categories.



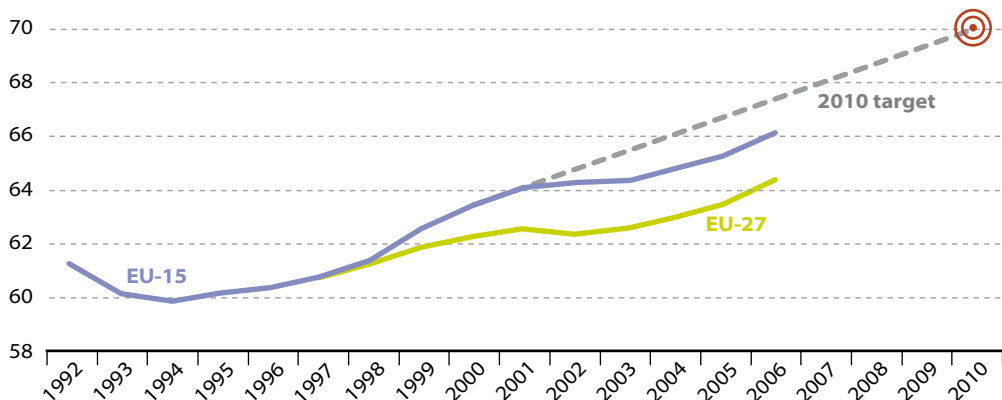
## Indicator relevance

Employment is a key economic and social indicator as it contributes to economic performance, quality of life and social inclusion. One of the key objectives of the renewed sustainable development strategy is to promote an economy 'which provides high living standards and full and high-quality employment throughout the European Union.' The renewed Lisbon strategy (2005), underpinned by the integrated guidelines 2005-2008, aims at setting out the appropriate responses to achieving higher growth potential and more and better jobs. Employment guideline 17 stipulates that employment policies should aim 'at achieving full employment, improving quality and productivity at work, and strengthening social and territorial cohesion', as well as 'contribute to achieving an average employment rate for the European Union of 70 % overall and of at least 60 % for women by 2010', with intermediate targets of 67 % and 57 % respectively for 2005.

The promotion of quality of jobs and the fight against gender inequality are other objectives of both Lisbon and sustainable development strategies. These objectives are monitored by the employment rates by gender and by educational attainment. In this context, completed upper secondary education would be considered a minimum level required for successful participation in a knowledge-based society.

**Figure 1.10. Total employment rate (%)**

Source: Eurostat.



## Analysis

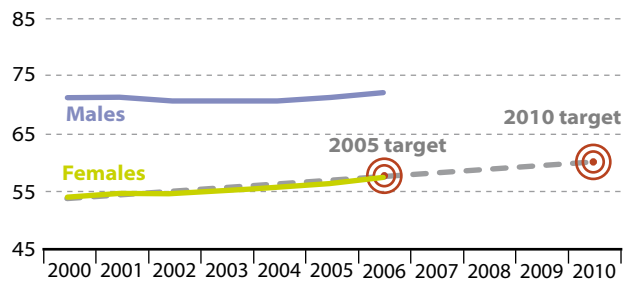
The EU-27 total employment rate increased from 62.2 % in 2000 to 64.3 % in 2006, and in wider proportion in the EU-15, from 63.4 % to 66.0 % during the same period. The intermediate target of 67 % in 2005 has not been reached at the EU level, although attained or exceeded by nine countries. Differences are sizeable between EU Member States and the employment rate in 2006 varied from 54.5 % in Poland to 77.4 % in Denmark (see country breakdown on the SDI website).



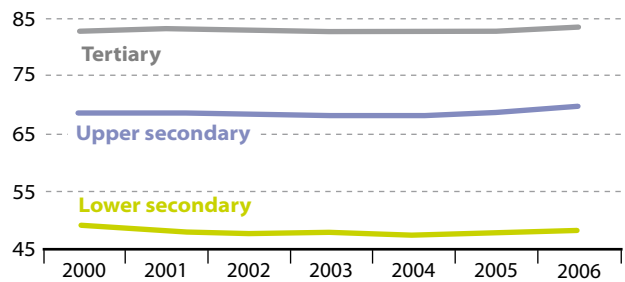
Despite the sharp increase observed in 2006 (from 63.4 to 64.3 %), the 'progress towards the overall Lisbon employment rate target for 2010 has continued to be slow and reaching this target is becoming increasingly challenging' <sup>(32)</sup>. Meeting the overall 70 % target would require an average annual growth rate of 1.4 percentage points until 2010, compared to the 0.4 points per year growth achieved in 2000-2006.

<sup>(32)</sup> Employment in Europe 2006, Directorate-General for Employment, Social Affairs and Equal Opportunities, 2006.

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



**Figure 1.12. EU-27 employment rate by highest level of education attained (%)**



Source: Eurostat.

Concerning employment rates by gender the distance between male and female employment rates shrank at a regular pace, from more than 17 points in 2000 to 14.5 points in 2006 in the EU-27. If the female employment rate in the EU-27 was in 2005 at a 1-point distance to the 57 % 2005 intermediate target, it was reached one year later with 57.1 %. The target was more than met in 2005 in the EU-15, at 57.4 % (see EU-15 data on the SDI website). The 60 % target for female employment by 2010 appears within reach if growth is sustained.

The breakdown of employment rate by highest level of education attained reveals that the share of people in employment is increasing with educational attainment. The employment rate was 47.9 % in 2006 for those EU-27 people having attained the first stage of basic education, having decreased by 0.9 percentage points since 2000. For people having attained secondary education, the share increased to 69.2 %, having increased by 0.9 percentage points since 2000. The share was at 83 % for people having attained tertiary education, up by 0.6 points compared with 2000.



## Employment



## Dispersion of regional employment rates

**Definition:** The indicator is expressed by the **coefficient of variation of regional employment rates of age group 15-64** at NUTS level 2. It gives a measure of the regional spread of the employment rates. 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 (European, respectively) level.

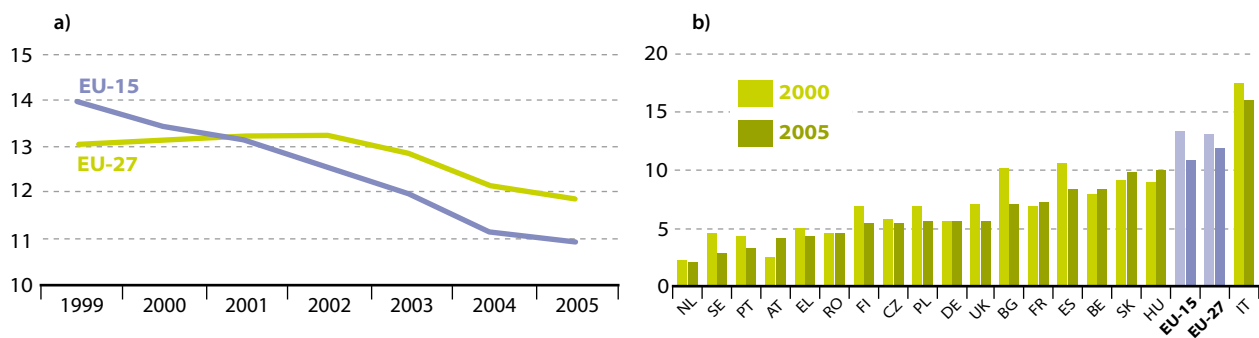


The dispersion of regional employment rates gives a measure of the regional spread of employment rates of the age group 15-64. It is zero when the employment rates in all regions are identical, and it rises if there is an increase in the differences between employment rates among regions. As NUTS 2 subdivisions do not exist in all countries, the indicator cannot be computed for Denmark, Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta and Slovenia.

## Indicator relevance

Economic and social disparities among EU Member States and among regions weaken the Union's dynamism overall. The fight against regional imbalances is an important goal of European policies and an objective of the sustainable development strategy. The Brussels European Council in 2003 demanded that the employment guidelines should address, inter alia, regional employment disparities.

Figure 1.13. Dispersion of regional employment rates at NUTS level 2 (a) over time and (b) by country (%)



NB: Please note difference in scale

Source: Eurostat.

## Analysis

The level of dispersion of employment rates across regions decreased in 13 out of the 18 EU countries for which the indicator can be computed, from 2000 to 2005. As a result, the EU-27 average declined from a coefficient of 13 % to 11.8 %, that is by 1.3 percentage points during the same period, while in the EU-15 the drop was of 2.5 percentage points, from 13.4 % to 10.9 %. If the level of inequalities is still amongst the lowest in Austria with a coefficient of 4.1 % in 2005, it has also undergone the sharpest increase, from 2.5 % since 2000. In two other countries, Sweden and Bulgaria, the reduction of inequalities fell by around one third, to a coefficient of 3 % in the former and 7.1 % in the latter. The highest level of regional discrepancies in 2005 was recorded in Italy, the only country above the EU average, with a coefficient of 16 %, while the lowest rates were found in the Netherlands (2 %) and Sweden (3 %).

## Unemployment

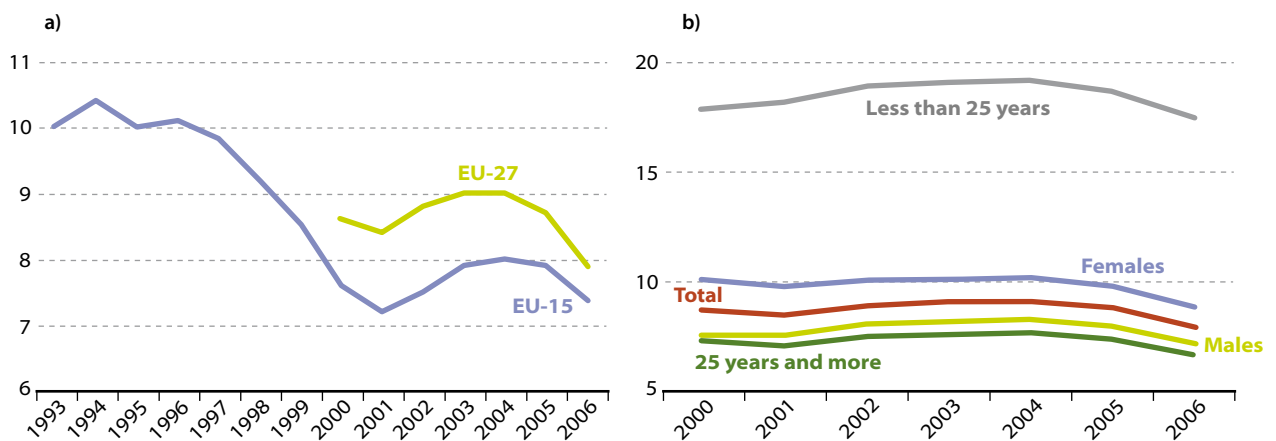


**Definition:** This indicator, defined as **total unemployment rate**, monitors: (1) the number of unemployed persons aged 15 to 74 years as a percentage of the labour force, broken down by gender; (2) for each age group, the number of unemployed persons as a percentage of the total population of the same age group.

Unemployment increases the risks of poverty and consequent social exclusion. EU policies and objectives are oriented towards the promotion of full employment and the increase in employment rates among vulnerable groups. In particular, some objectives aim at improving the adaptability of workers and enterprises, the balance between flexibility and security, the working of labour market policies and the efficiency and effectiveness of employment services. Tax-benefit systems in particular need to be designed in a way to allow people to search for and take up jobs.

### Indicator relevance

**Figure 1.14. Unemployment rate (a) total over time (b) by gender and by age group (EU-27) (%)**



NB: Please note difference in scale

Source: Eurostat.

Unemployment declined by more than two percentage points in the EU-15 from 1993 to 2000. The overall decrease between 2000 to 2006 was of only 0.2 percentage points, following an increase which peaked in 2004. In the EU-27 a significant improvement was observed between 2004 and 2006 with a reduction of unemployment by 1.1 percentage points, resulting in an overall decrease of 0.7 points between 2000 and 2006. It is mainly young and older workers, women and low-skilled people that suffer most from joblessness (see further data on the Eurostat website). In the EU-27, the labour market situation of young workers (aged 15 to 24), which deteriorated from 17.8 % in 2000 to 19.1 % in 2004, has since improved to reach 17.4 % in 2006, resulting in an overall small decrease of 0.2 %. It remains however much higher than the level for the rest of the population, at 6.6 %. The EU-27 unemployment rate of women has also decreased significantly, from 10 % in 2000 to 8.8 % in 2006, but is still 1.7 points higher than that of men.

### Analysis



## Methodological notes

### GDP per inhabitant

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

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

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

Figures from 2007 onwards are forecasts produced by the Directorate-General for Economic and Financial Affairs. They are used for the latest periods as long as official results have not been transmitted.

### Dispersion of regional GDP per inhabitant

For a given country the dispersion of regional GDP of the level 3 regions is defined as the sum of the absolute differences between regional and national GDP per inhabitant, weighted with the regional share of population and expressed in percent of the national GDP per inhabitant.

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

### Investment

Data are taken from national accounts which are compiled in accordance with the European system of accounts (ESA 95). Current price figures expressed in euro (ecu before 1999) have been used to calculate the shares. Aggregate data for the EU are, in general, derived by adding the respective Member State's data, but some additional estimations or imputations have been required for the presentation of annual data. Figures for total investment from 2007 are forecasts.

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.

Figures from 2007 onwards are forecasts produced by the Directorate-General for Economic and Financial Affairs. They

are used for the latest periods as long as official results have not been transmitted.

### Saving

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

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

As regards data for the EU-27, 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.

The European quarterly sector accounts are updated every quarter.

### Labour productivity

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.

The EU average for labour productivity includes many estimates prior to 2001-2002 and forecasts thereafter. Expressing productivity per hour worked eliminates differences in the full-time/part-time composition of the workforce.

### International cost competitiveness

The real effective exchange rates (REER) are calculated to measure cost competitiveness and are currently based on IC36 (EU-27 plus the following nine industrial countries: Australia, Canada, United States, Japan, Norway, New Zealand, Mexico, Switzerland and Turkey). REER are also available based on a broader reference group (broad 41) including IC36 plus Russia, China, Brazil, Korea and Hong Kong, but restricted to price competitiveness (using HICP or other consumer price indexes as a deflator) only. This makes possible to cover over 80 % of extra-euro area exports instead of the current 58 %, and thus better reflects trade patterns, including those with the new Member States.



### Box 1.4: The labour force survey (LFS)

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

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

The LFS divides the population of working age (15 years and above) into three mutually exclusive and exhaustive groups

(persons in employment, unemployed persons and inactive persons) and provides descriptive and explanatory data on each of these categories.

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

### Research and development expenditure

Gross domestic expenditure on research and experimental development (GERD) data are collected through the annual Eurostat R & D questionnaires and are calculated using current ecu/eur. The figures relating to GDP are compiled in accordance with ESA 95.

For some countries which attract significant foreign direct investments, a use of GDP as denominator restricts relevance as while these investments are visible in GDP and high-tech exports figures for countries where investments are made, R & D work may be performed in investors countries and they are not visible in R & D expenditure figures for the countries where the investments are made. In these cases it would be better to use gross national income (GNI) as denominator, provided all transactions between R & D exporting and importing countries are measured. Measurement problems may occur in the case of multinationals.

### Energy intensity

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

See GDP per inhabitant for GDP figures.

### Employment and unemployment rates

The quarterly EU labour force survey (see Box 1.4) is used for the calculation of both the employment and unemployment rates. Any missing quarter is estimated to produce the annual average.

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

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

### Dispersion of regional employment rates

Regional employment rates represent annual average figures and are taken from the European Union labour force survey.

The indicator is not applicable for Denmark, Ireland, Luxembourg, Cyprus, Estonia, Lithuania, Latvia, Malta and Slovenia as these countries comprise only one or (in the case of Ireland) two NUTS level 2 regions. However, the employment rates of these countries and of the two Irish regions are used to compute the dispersion of regional employment rates for groups of countries.

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.



# Climate change and energy

# 2

## **Strategy objective:**

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

## Policy Background

<sup>(33)</sup> A sustainable Europe for a better world: A European Union strategy for sustainable development, COM(2001) 264.

<sup>(34)</sup> EU policies and measures to reduce greenhouse gas emissions: Towards a European climate change programme (ECCP), COM(2000) 88.

<sup>(35)</sup> Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

<sup>(36)</sup> Council Directive 2003/96/EC on restructuring the Community framework for the taxation of energy products and electricity.

<sup>(37)</sup> Presidency conclusions of the Brussels European Council, 8 and 9 March 2007.

In 2001, the Commission's communication to the Gothenburg European Council <sup>(33)</sup>, identifying climate change as one of the main threats to sustainable development, emphasised the need for increased use of 'clean' energy to limit climate change. This implies reducing the consumption of high-carbon energy sources such as fossil fuels and increasing production of energy from renewable sources and production of electricity via combined heat and power, as advocated by the European climate change programme <sup>(34)</sup>, which is a package of measures proposed to comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). In December 2002, after the Kyoto Protocol had been ratified by all 15 EU Member States in May of the same year, the EU created an emissions trading system <sup>(35)</sup> in an effort to meet these targets. The taxation of energy products and electricity is another instrument for achieving the Kyoto objectives <sup>(36)</sup>.

In 2006, the renewed sustainable development strategy pointed out that 'unsustainable trends in relation to climate change and energy use' still persisted, bringing about a sense of urgency, the main challenge being to 'gradually change our current unsustainable consumption and production patterns and the non-integrated approach to policy-making'.

In spring 2007 the European Council endorsed an integrated climate and energy policy <sup>(37)</sup> (see Box 2.2) on the basis of Commission proposals and the 2006 renewed sustainable development strategy. This policy comprises three main goals. Firstly, the EU committed itself to reduce greenhouse gas emissions by at least 20 % by 2020, compared to 1990 levels, and if other developed countries committed themselves to similar cuts, would extend this reduction to 30 %. Secondly, it was also decided to unbundle or separate the operation and maintenance of energy networks from the production and supply of energy. And thirdly, a binding target was set to increase the share of renewables in consumption to 20 % by 2020, with a minimum of 10 % for the share of biofuels in transport consumption.

The development of a comprehensive European energy policy has not been simple. Although energy policy has always been of crucial importance to the EU, its focus has shifted and evolved over the past 50 years. Initially the main concerns were the creation of a single market in coal and cooperation in the field of nuclear energy. However, the oil crisis of the 1970s demonstrated the need for coordinated action to stabilise prices and supplies. Since then the issues of energy saving, renewables, harmonisation of taxes on oil products, and the development of a trans-European energy distribution network have been agreed at Community level. Environmental policy has also treated energy-related issues such as pollutant emissions resulting from energy use. Two issues of major current concern, climate change and security of supply, both require action at the international and global level. As a result, the need for a common EU energy strategy, although not a Treaty obligation, has gradually become apparent.

<sup>(38)</sup> Energy efficiency in the European Community — Towards a strategy for the rational use of energy, COM(1998) 246.

<sup>(39)</sup> Green Paper Towards a European strategy for the security of energy supply, COM(2000) 769.

<sup>(40)</sup> Green Paper A European strategy for sustainable, competitive and secure energy, COM(2006) 105.

In 1998, the Commission proposed a strategy for the rational use of energy <sup>(38)</sup>, focusing on the role of energy efficiency in the development of a more sustainable energy policy with reduced CO<sub>2</sub> emissions and enhanced security of supply. A Green Paper published in 2000 <sup>(39)</sup> concentrated on the issue of energy security, and concluded that a coordinated EU energy strategy was needed to address the EU's increasing dependence on external energy sources and that energy-saving measures should be promoted in order to reduce demand and to reduce CO<sub>2</sub> emissions. These proposals were developed more concretely in the 2006 Green Paper on a European strategy for sustainable, competitive and secure energy <sup>(40)</sup>. The 2006 Green Paper argued that it would only be possible to meet key objectives on the security of supplies, a well functioning internal market, sustainable economic growth and greenhouse gas emission reductions if a common EU energy policy were in place. It proposed that the EU should work more closely together on issues such as energy saving, renewable energy, investment in generation capacity and future energy technologies, as well as speaking with a common voice in international energy forums.



## Main changes

Table 2.1: Evaluation of changes in the climate change and energy theme (since 2000) <sup>(41)</sup>

	EU-27	EU-15
Greenhouse gas emissions	:	☁⚡
Consumption of renewables	☁⚡	☁⚡
<b>Climate change</b>		
GHG intensity of energy consumption	☀☁	☀☁
<b>Energy</b>		
Energy dependency	☁⚡	☁⚡
Gross inland energy consumption	☁⚡	☁⚡
Electricity generation from renewables	☁⚡	☁⚡
Combined heat and power	:	:
Consumption of biofuels	☁⚡	☁⚡



### LEGEND:

- ☀ favourable change/ on target path
  - ☀☁ no or insufficient change
  - ☁⚡ unfavourable change/far from target path
  - :
- insufficient data/EU aggregate not available

<sup>(41)</sup> There is no agreed EU-25 or EU-27 target for the reduction of greenhouse gas emissions and therefore this indicator has not been evaluated for the EU-27. The global surface average temperature has not been evaluated as the current indicator does not measure the change with respect to the pre-industrial temperature level against which the trend should be evaluated. Changes in methodology preclude the quantitative assessment of progress regarding combined heat and power generation. The implicit tax rate on energy has not been evaluated because the optimal level of taxation for society is not known.

There are no favourable changes to report since 2000. Following the considerable progress achieved in reducing greenhouse gas emissions during the 1990s, and despite a significant reduction between 2004 and 2005, the EU-15 trend has reversed and is now moving away from the target. On a slightly more positive note, the share of renewables in primary energy consumption is increasing, although at a rate so slow that the distance from the linear target path is widening each year. Similarly, the greenhouse gas intensity of energy consumption is moving in the right direction, but progress is too slow to make a major contribution. Gross inland energy consumption continues to grow at a rate above 1 % per year, and there has been little shift away from high-carbon fossil fuels. Much of this energy is imported and the rate of energy dependency continues to increase steadily. Little, if any, progress has been made in increasing either the share of renewables in electricity consumption or the share of combined heat and power generation in electricity generation. Despite the growing use of biofuels in transport, the level of uptake in 2005 was 1.1 %, far below the target level of 2 % set for that year.

In 2005, EU-15 emissions of greenhouse gases stood at 98 % of their Kyoto base year value, and 98.5 % of their 1990 value, while EU-27 emissions were at 92.1 % of their 1990 value. Between 1990 and 2000, EU-15 emissions of greenhouse gases <sup>(42)</sup> fell by 2.9 percentage points due mainly to a shift away from coal and towards gas, particularly in the electricity generation sector. Over the same period, EU-27 emissions fell by 9.3 points, aided by the relatively low growth rate of 0.4 % per year in gross inland energy consumption (primary energy supply). These trends are reflected in the substantial annual decreases in greenhouse gas intensity of the energy sector over that decade (annual average rate of change of -1 % for EU-15 and -1.1 % for EU-27).

Greenhouse gas emissions from the energy sector, which decreased during the previous decade, have grown annually at the rate of 1.0 % (EU-27) and 1.4 % (EU-15) since 2000. And although emissions from transport, which grew at an average rate of 1.7 % (EU-27) and 1.8 % (EU-15) per year between 1990 and 2000, have slowed down to 1.3 % (EU-27) and 0.9 %

### Greenhouse gas emissions have continued to rise

<sup>(42)</sup> These figures do not include greenhouse gas removals and emissions due to land use, land-use change and forestry.

(EU-15) since then, total greenhouse gas emissions grew by 1.5 percentage points (EU-27) and 1.4 points (EU-15) between 2000 and 2005. Since 2000, the EU-15 emissions trend has been moving away from the Kyoto target path.

**Rising global temperatures are a cause for concern**

The average global surface temperature rose by approximately 0.76 °C between the latter half of the 19th century (1850-1899) and the first five years of this century (2001-2005). Although such changes have occurred in the past through natural processes, the scientific consensus is that recent warming has been largely caused by increased levels of greenhouse gases in the atmosphere originating from human activity <sup>(43)</sup>.

**Emissions from international bunkers are growing rapidly**

Emissions due to international bunkers account for a small but rapidly growing proportion of greenhouse gas emissions, equivalent to 5.6 % of the total in 2005 in the EU-27, compared with 6.6 % for the EU-15. Their share has increased significantly since 1990, from 1.2 % to 2.4 % for aviation and from 1.9 % to 3.1 % for shipping. The annual growth rate between 1990 and 2000 in the EU-27 was an extraordinary 5.4 % for aviation and 2.4 % on average since then (2.2 and 3.6 % for the EU-15). But this last figure hides the lower demand for air transport following the 11 September 2001 attacks on the World Trade Center in New York. Emissions from international shipping, which grew by 2.1 % in the EU-27 (5.8 % for the EU-15) annually until 2000, have grown at an average of 3.9 % (2.3 % for the EU-15) per year since then.

<sup>(43)</sup> IPCC, 2007: 'Summary for policymakers' in *Climate change 2007: The physical science basis*. CUP, Cambridge, UK and New York, USA.

**Member State projections indicate that the Kyoto targets can be achieved**

Despite the tendency over recent years towards increasing greenhouse gas emissions and away from the Kyoto target, information available at the time of writing <sup>(44)</sup> indicates that reaching the target is possible with the additional policies and measures already planned by Member States, including the use of carbon sinks and so-called Kyoto mechanisms, as well as the EU Emissions Trading Scheme.

**The EU is becoming more dependent on imported energy**

EU-27 dependence on imported energy fluctuated between 1990 and 2000, ending up 2.3 percentage points higher at the end of the decade relative to the beginning. Since then the level of dependence has increased every year, and in 2004 exceeded 50 %, ending up 5.7 percentage points higher in 2005 than in 2000. The energy dependence of the EU-15 is about 3 percentage points higher than that of the EU-27.

**Energy consumption is growing faster**

Since 2000, gross inland energy consumption has grown at 1.1 % per year for both the EU-27 and the EU-15, growing considerable faster in the EU-27 than in the previous decade, and reflecting increasing energy demand. The switching from high-carbon solid fuels towards gas and renewables continues, but at a slower pace. And the share of nuclear has remained at a constant 14 % over recent years.

**Current progress in renewables is slow**

The EU-27 consumption of renewable energy sources as a whole increased at the significant average rate of 3.2 % per year during the 1990s, growing to 4.1 % between 2000 and 2005. Nevertheless, due to the low starting point, the long lead times needed to build up capacity and the relatively high growth rate of gross inland consumption over recent years, the share of renewables has increased by only 0.18 percentage points per year since 2000, reaching a level of 6.7 % in 2005, far from the 2010 target of 12 %. Biomass is the most important renewable, comprising more than two-thirds of the total in 2005 and having the highest growth rate in terms of its share. Hydro is second in importance, although weather dependent, and it actually reduced its share between 2000 and 2005 due to a number of very dry years. Wind and geothermal are still minor contributors and although showing high growth rates in absolute terms, the size of their share is developing very slowly.

<sup>(44)</sup> New projections contained in the forthcoming European Environment Agency report *Greenhouse gas emission trends and projections in Europe 2007* may lead to slightly different conclusions.

Progress in the share of renewables in electricity consumption has slowed down since 2000, growing at an average of 0.04 percentage points per year compared with 0.14 during the previous decade. This leaves a gap of 7 percentage points between the level of 14 % in 2005 and the 2010 target of 21 %. Achieving the target will require growth of 1.4 percentage points per year, equivalent to the entire progress made between 1990 and 2000. Nor does progress towards the targets for biofuels in transport appear more achievable. In 2005 the share of biofuels represented only 1.08 % for the EU-27, which is far from the 2 % target for that year. Nevertheless, the growth rate is accelerating and has increased from 0.02 percentage points per year during the 1990s to 0.17 percentage points per year between 2000 and 2005.

Similarly the production of energy through combined heat and power appears to be making little progress towards the 2010 target of 18 %, standing at only 10.5 % in 2004, although due to changes in the methods used to calculate this indicator it is not possible to draw firm conclusions.

The implicit tax rate on energy grew at roughly 5 % per year during the 1990s, reflecting the strong growth in energy tax revenues relative to energy consumption. This is in contrast with the situation between 2000 and 2004 where revenues grew only slightly faster than consumption, leading to an annual growth rate in the implicit tax rate of only 0.3 % per year.

**The increase in the implicit tax rate on energy is slowing down**

### Box 2.1: Objectives related to climate change and clean energy in the renewed sustainable development strategy

- |   |   |
|---|---|
| <p>Overall objective: To limit climate change and its costs and negative effects to society and the environment</p> <p>Operational objectives and targets</p> <ul style="list-style-type: none"> <li>• Kyoto Protocol commitments of the EU-15 and most EU-25 to targets for reducing greenhouse gas emissions by 2008-2012, whereby the EU-15 target is for an 8 % reduction in emissions compared to 1990 levels. Aiming for a global surface average temperature not to rise by more than 2 °C compared to the pre-industrial level.</li> <li>• 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.</li> </ul> | <ul style="list-style-type: none"> <li>• Adaptation to, and mitigation of, climate change should be integrated in all relevant European policies.</li> <li>• By 2010, 12 % of energy consumption, on average, and 21 % of electricity consumption, as a common but differentiated target, should be met by renewable sources, considering raising their share to 15 % by 2015.</li> <li>• By 2010, 5.75 % of transport fuel should consist of biofuels, as an indicative target, (Directive 2003/30/EC), considering raising their proportion to 8 % by 2015.</li> <li>• Reaching an overall saving of 9 % of final energy consumption over nine years until 2017 as indicated by the energy end-use efficiency and energy services directive.</li> </ul> |
|---|---|

### Rationale for the selection of indicators

The indicators of this theme have been selected with the aim of monitoring the objectives and targets described in the renewed sustainable development strategy (Box 2.1).

Two headline indicators have been chosen to represent this theme: one related to climate change and one to clean energy. Given the overall objective of the theme and the first operational objective in the list, the first headline indicator therefore monitors the total greenhouse gas emissions in relation to the Kyoto targets. In order to better illustrate where we are now in relation to the Kyoto target the presentation of the indicator here has been supplemented with projections of emissions up to 2010. Reflecting the important role of renewables in reducing greenhouse gas emissions and reducing dependency on imported energy, a second headline indicator is therefore the 'share of renewable energy in gross inland energy consumption'.

The remaining indicators are arranged in two subthemes.

- **Climate change:** a first indicator shows the contribution of key sources of emissions to total greenhouse gas emissions, including CO<sub>2</sub> removed by sinks. 'Greenhouse gas intensity of energy use' reflects the impact of the fuel mix and the different carbon contents of different fuels on emissions of the basket of six greenhouse gases. Finally, 'global surface average temperature' provides the essential context on what is happening to the planet and reflecting the primary objective of limiting climate change and its costs and negative effects.
- **Energy:** 'energy dependency' provides information on the extent to which we depend on energy imports, an important aspect related to the security of energy supply. 'Gross inland energy consumption, by fuel' shows the total quantity of primary energy consumed to meet final energy needs. Its analysis is carried out in terms of both quantities and energy mix. 'Share of renewables in gross inland electricity generation' and 'combined heat and power generation' provide information on electricity generation (a major and growing consumer of fossil fuels) and the diversification of supply. The indicator on 'consumption of biofuels' monitors the uptake of this renewable source of energy for transport.

Finally, an indicator on 'energy tax revenue' provides information on the use of economic instruments to influence energy consumption.

Trends in nuclear energy are covered in purely quantitative terms in the indicator on gross inland energy consumption. The indicator on 'high-level radioactive waste and spent nuclear fuel awaiting permanent disposal', which is linked to a major risk associated with nuclear generation, could not be presented in this report because of data limitations. Future developments include an indicator on 'external costs of energy use'.

Indicators related to this subtheme also include 'final energy consumption by sector' in the sustainable consumption and production theme, which monitors the driving forces behind energy consumption, and 'Energy intensity of the economy', in the socio-economic development theme, which monitors decoupling between energy consumption and economic development.

### Box 2.2. An integrated climate change and energy policy

The Heads of State or Government, meeting within the 2007 spring Council, agreed on an integrated climate change and energy policy, including a set of three headline political targets.

1. On climate change, an independent EU commitment to reduce greenhouse gases by at least 20 % by 2020, compared to 1990 levels, plus a commitment to extend this reduction to 30 % if other developed countries commit themselves to comparable emissions reductions. Each Member State will contribute to these cuts through national targets to be set out in Community legislation.
2. On the internal market for gas and electricity, the need for effective separation of supply and production activities from network activities (unbundling) based on independently run and adequately regulated network operation systems which guarantee equal and open access to transport, together with further harmonisation of the powers and strengthening of the independence of national energy regulators.

3. On renewable energies, a binding target of 20 % by 2020 with a minimum of 10 % for the share of biofuels in overall EU transport petrol and diesel consumption. There will be a clear mechanism for allocating and monitoring the national contributions to meeting the target which will be agreed by the Commission with each Member State.

These headline decisions are accompanied by strong conclusions on the need to accelerate the development and take-up of new technologies. The challenge of turning the EU into a low-carbon society was also seen as an opportunity, with the potential for important economic and job creating opportunities.

The European Council also expressed its determination to continue the EU's lead in building an international consensus on combating climate change. Many emphasised the need to persuade other major partners to join in the EU's efforts but also highlighted the importance of leading by example.

## Potential linkages

Climate change is intimately linked with energy use, and both issues are connected with a wide range of social, environmental and economic aspects.

Greenhouse gas emissions are directly influenced by both the quantity and mix of energy consumed. The energy mix is expected to be impacted by the structure of industrial production, the use of indigenous resources and policy choices; the combined interaction between these factors is thought to ultimately determine fuel choices and the resulting greenhouse gas emissions. Investment in research and development can in the longer run influence greenhouse gas emissions through increased availability of more energy-efficient technologies, clean sources of energy, and methods of carbon sequestration.

Climate change and in particular emissions of greenhouse gases are closely related to the level of economic activity, as energy consumption tends to grow with economic growth. Energy consumption is strongly related to transport, particularly the modal split, the volume of freight and passenger transport which is also growing in parallel with economic growth, leading to higher energy consumption and emissions of air pollutants. There is also a link to land use development, as the expansion of cities is resulting in increased demand for energy at local level, impacting on local pollution. There is a general concern that measures and incentives aimed at reducing emissions may have a negative impact on the economy by representing a burden on governments and companies, thus giving rise to higher risks of unemployment.

There is also a concern, however, that if no action is taken, climate change would damage the economy, for instance by the repeated occurrence of extreme climatic events (flooding, drought, heatwaves, and storms), and declining crop yields <sup>(45)</sup>. The geographic range for some infectious diseases may increase with climate change. Heatwave related deaths and illness episodes are expected to increase, and increases in flooding may increase the risk of drowning, diarrhoeal and respiratory diseases, and, in developing countries, hunger and malnutrition.

Without further action climate change is also expected to damage natural resources and to affect global biodiversity. Climate change has already led to measurable changes in almost all ecosystems, and large climate-induced changes in population distributions of many species as well as considerable numbers of extinctions are forecast to occur this century. On the other hand, some natural resources, such as forests oceans and wetlands can also act as sinks for greenhouse gases. Ecosystems such as coastal wetlands and floodplains can also be used in adaptation strategies against flooding and sea level rise.

Climate change and energy consumption are also closely linked to consumption and production patterns. Energy is an important input to all production processes, and is used to move goods from the producer to the consumer. The number of households and consumption patterns affect energy consumption of households. Corporate social responsibility, for example the use of eco-labelling, or of environmental management systems are likely to lead to energy savings.

As more and more of the goods consumed in the EU are produced and transported from outside the EU, there is a clear link to the external dimension of sustainable development. Such 'outsourcing' can reduce the EU's internal emissions of greenhouse gases, but does nothing to improve global emissions or to avert significant climate change. On the other hand, via the clean development mechanism, the EU can invest in activities to reduce greenhouse gas emissions in developing countries, with benefits both at home and in the rest of the world.

Linkages within climate change and energy

Linkages with the socioeconomic dimension

Linkages with the environmental dimension

Linkages with sustainable consumption and production

Linkages with global partnership

<sup>(45)</sup> For more details see for example Stern, N, 2006. *The economics of climate change, The Stern review*. Cabinet Office, HM Treasury.

Issues of dependency and security of energy supply call for energy cooperation with third countries. Energy dependency will influence 'global partnership', if only as a driver for promoting a low carbon economy both internally and externally. World market prices of oil and gas could be very volatile as observed recently. The effects of the sharp price increases in oil and gas are too recent to be taken into account but they should have a clear impact on the responses to the policy measures adopted since 2000.

Climate change is also related to global partnership issues, as poorer countries are recognised as being especially vulnerable to the impacts of global warming. Hot spots may also result from population migration, causing serious environmental problems locally, including land use and use of local natural resources.

#### Linkages with good governance

Policy coherence between different areas of Community action is important for combating climate change. The use of economic instruments is also key to achieving emission targets, in particular the EU emissions trading system and the taxation of energy products and electricity. Energy taxes can be cost-effective instruments to gradually reduce CO<sub>2</sub> emissions from transport, and can also be a major policy instrument to reduce the EU's energy dependency.

#### Further reading on climate change and energy in Europe

An energy policy for Europe, COM(2007) 1

Limiting global climate change to 2 degrees Celsius: the way ahead for 2020 and beyond, COM(2007) 2

*Climate change 2007*, Fourth Assessment Report of the Intergovernmental Panel on climate change, Cambridge University Press, Cambridge, United Kingdom and New York, USA

Annual European Community greenhouse gas inventory 1990-2005 and inventory report 2007: Submission to the UNFCCC Secretariat, Technical report No 7/2007

*Energy panorama — Energy statistics to support EU policies and solutions*. Luxembourg, Office for Official Publications of the European Communities, 2007

*Greenhouse gas emission trends and projections in Europe 2006*, EEA report No 9/2006, European Environment Agency. (NB: A revised edition of this publication is planned for October 2007)

*Energy and environment in the European Union: Tracking progress towards integration*, EEA report No 8/2006. Luxembourg, Office for Official Publications of the European Communities, 2006

## Greenhouse gas emissions and projections



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

There is growing evidence that emissions of greenhouse gases are responsible for global warming, with potentially dramatic economic, social and environmental consequences at global level. Under the Kyoto Protocol, the EU-15 has agreed to an 8 % reduction in its greenhouse gas emissions by 2008-2012, compared with the base year emissions. Individual targets for each country have been agreed under the EU Burden Sharing Agreement <sup>(46)</sup>, which allows Greece, Ireland, Portugal, Spain and Sweden to increase emissions, provided these are offset by reductions in other Member States. Although no common target has been agreed for the EU-27 as a whole, most of the new Member States have set national targets under the Kyoto Protocol.

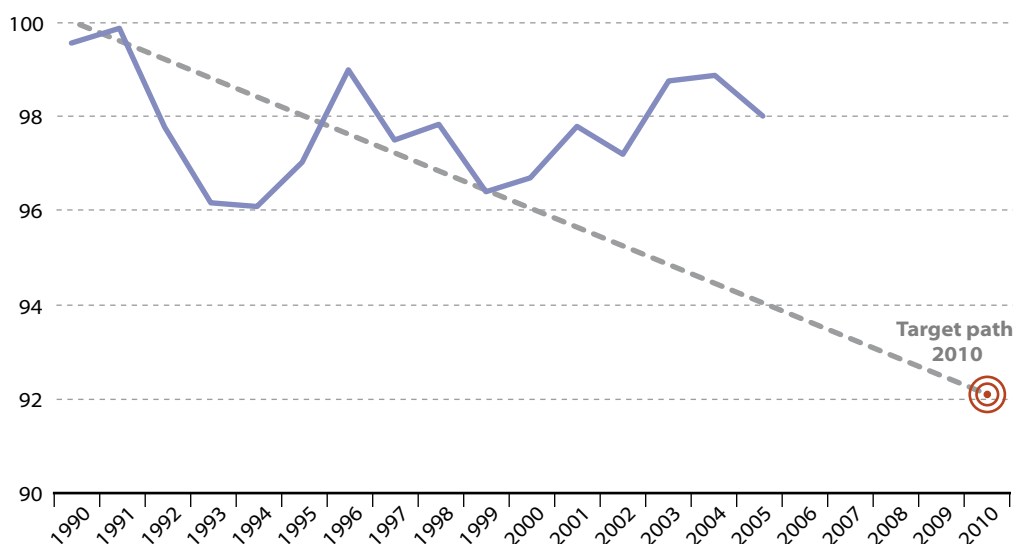
Projections are intended to enable an assessment of 'projected' progress towards meeting the Kyoto targets via current and complementary measures.

On 8 and 9 March 2007, the European Council committed itself to transforming Europe into a highly energy-efficient and low greenhouse-gas-emitting economy and made a firm independent commitment to achieve at least a 20 % reduction of greenhouse gas emissions by 2020 compared to 1990 <sup>(47)</sup>.

### Indicator relevance

<sup>(46)</sup> Council 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.

<sup>(47)</sup> Presidency conclusions of the Brussels European Council, 8 and 9 March 2007.

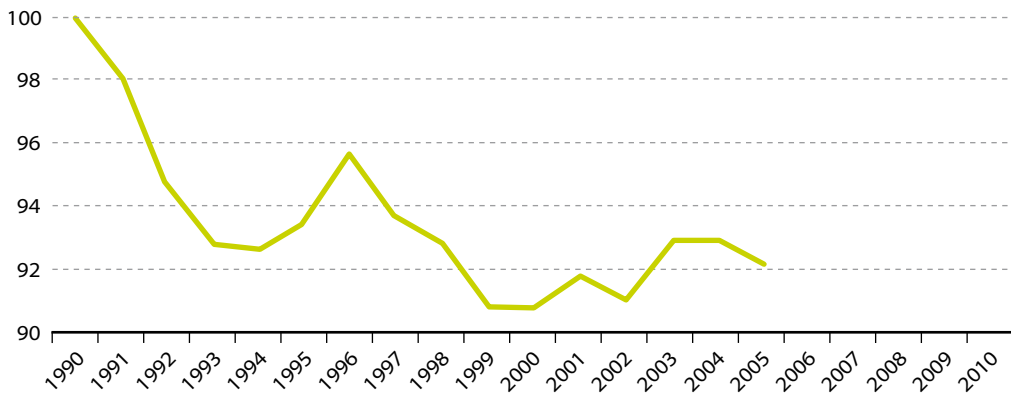


**Figure 2.1: EU-15 total greenhouse gas emissions and target according to the Kyoto Protocol for 2008-2012 (as % of base year emissions)**

Source: European Environment Agency, Eurostat.

**Figure 2.2: EU-27 total greenhouse gas emissions (index 1990=100)**

Source: European Environment Agency, Eurostat.



### Analysis

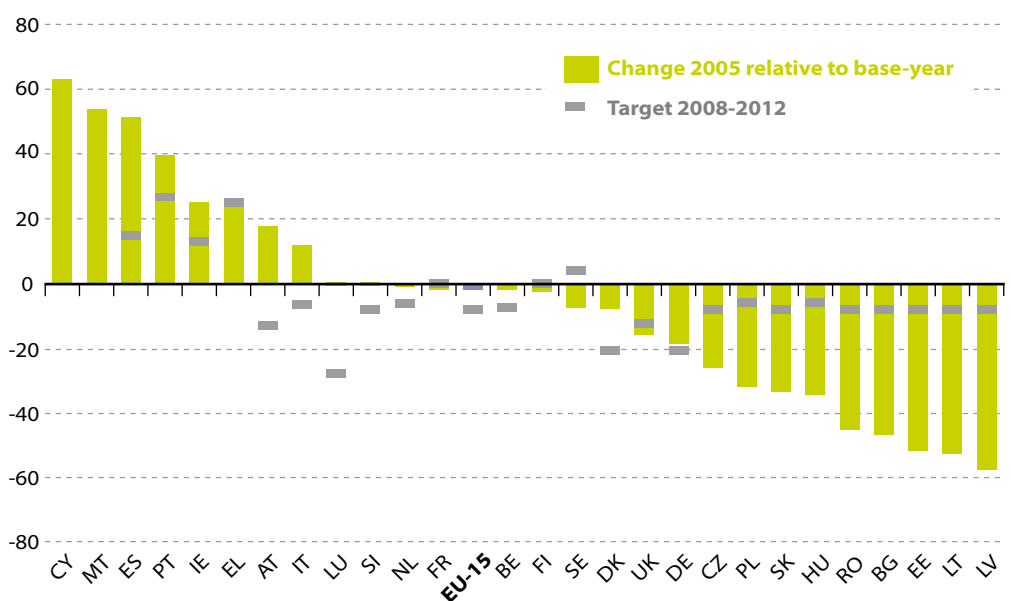
Between 1990 and 2000, EU-15 greenhouse gas emissions fell by approximately 0.3 % per year on average and were more or less in line with the target path. However, since 2000, the trend has reversed and emissions have risen by an average of 0.3 % annually. In 1990, total EU-15 emissions of greenhouse gases amounted to 4 257 million tonnes of CO<sub>2</sub> equivalents. The base year value was 4 279 million tonnes. In 2005, they reached 4 192 million tonnes and to achieve the 8 % objective, they would need to be decreased by a further 255 million tonnes.

For the EU-27, the 1990s saw a stronger rate of reduction of about 1.0 % per year, followed between 2000 and 2005 by an average annual rise of about 0.3 %. As a result, in 2005 EU-27 emissions stood at 92.1 % of their 1990 value, contrasting favourably with the 98.5 % for the EU-15 (98.0 % measured against the base year).

The reductions achieved over the 1990s were mainly due to switching from coal to gas and nuclear energy (see indicator on gross inland energy consumption), and to a lesser extent from improved energy efficiency. The energy mix has been rather stable since 2000, albeit at a lower greenhouse gas intensity (see indicator on greenhouse gas intensity), and the recent growth in emissions reflects the recent growth in energy consumption.

**Figure 2.3: Percentage change (2005) in greenhouse gas emissions since the base year, and agreed targets for 2008-2012**

Source: European Environment Agency, Eurostat.

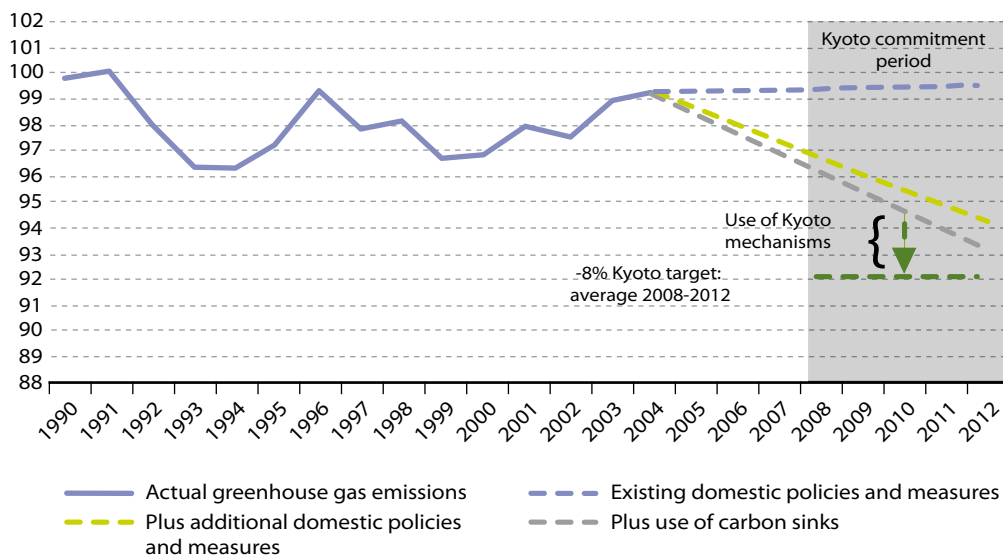




Of the 27 current EU Member States, 25 have Kyoto commitments, the exceptions being Cyprus and Malta. Figure 2.3 shows the targets for each country in contrast with the emissions in 2005 relative to their base years. Germany and the UK have achieved significant cuts, of 18.7 % and 15.7 %, respectively, although Germany is still a few percentage points above its target of 21 % reductions. The large reductions from these two countries are important because together they are responsible for about 40 % of EU-15 greenhouse gas emissions. Other EU-15 countries which have reduced their emissions relative to their base years are Denmark, Sweden, Finland, Belgium, France and the Netherlands. Of these, Sweden, Finland and France have achieved their targets, whilst Denmark, Belgium and the Netherlands have still to make significant cuts. The other EU-15 countries have all increased their emissions.

Of the remaining countries, which are outside the EU-15 burden sharing arrangement, nine of them (Lithuania, Latvia, Estonia, Bulgaria, Romania, Hungary, Poland, Slovakia, and the Czech Republic) have reduced their emissions significantly below their target levels. Slovenia has also achieved some reduction, but is still far from its target. Although Cyprus and Malta have both ratified the Kyoto Protocol, neither is committed to emission reductions and greenhouse gas emissions have grown in both these countries.

The latest projections for 2010 available at the time of writing, compiled by the European Environment Agency<sup>(48)</sup> on the basis of individual Member State projections, show that the combined effect of existing and additional domestic policies and measures, including Kyoto mechanisms<sup>(49)</sup> and 'carbon sinks'<sup>(50)</sup> should bring emissions down to 8 % below the EU-15 base-year level. This corresponds to the reduction agreed under the Kyoto Protocol.



**Figure 2.4: Total EU-15 greenhouse gas emissions and projections**

*NB:* New projections contained in the forthcoming European Environment Agency report *Greenhouse gas emission trends and projections in Europe 2007*, not available at the time of writing, may differ slightly from the information provided here.

Source: European Environment Agency.

With existing domestic policies and measures<sup>(51)</sup>, total EU-15 greenhouse gas emissions are expected to have fallen by only about one percentage point below the base-year level by 2010. However, additional domestic policies and measures already planned by Member States are projected to bring total EU-15 emissions down by about a further 5 %. The use of the EU Emissions Trading Scheme, the Kyoto mechanisms and carbon sinks should then bring emissions down to the target level or below.

<sup>(48)</sup> 'Greenhouse gas emission trends and projections in Europe 2006', EEA report No 9/2006, European Environment Agency. An updated report is to be published in October 2007.

<sup>(49)</sup> Mechanisms by which a developed country with a (Kyoto Protocol) greenhouse gas emission reduction target can meet part of this target through investments in project activities aimed at reducing emissions, either in developing countries (clean development mechanism) or in other developed countries (joint implementation).

<sup>(50)</sup> According to Article 3.3 and 3.4 of the Kyoto Protocol, parties should use CO<sub>2</sub> removals by land use change and forestry activities, i.e. carbon sinks, to achieve their targets.

<sup>(51)</sup> Interested readers are advised to consult the EEA website for the latest information and for more detail than can be provided here.

## Headline indicator

## Consumption of renewables

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



## Indicator relevance

Renewable energy sources are important for decreasing both the EU's dependence on imported fossil fuels and its greenhouse gas and other pollutant emissions.

<sup>(52)</sup> Energy for the future: renewable sources of energy. White Paper for a Community strategy and action plan, COM(97) 599.

<sup>(53)</sup> Presidency conclusions of the Brussels European Council, 8 and 9 March 2007.

<sup>(54)</sup> For details see the European Climate Change Programme (ECCP) Database on Policies and Measures in Europe <http://www.oeko.de/service/pam/sector.php>

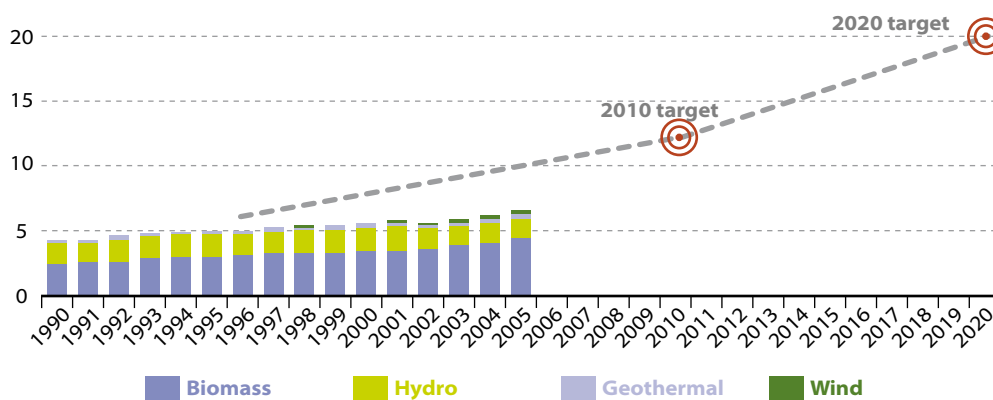
The 1997 White Paper on energy for the future <sup>(52)</sup> initially set a target for doubling the use of renewables in the Union as a whole from the 1996 level of approximately 6 to 12 % in 2010. This target was reaffirmed in the renewed sustainable development strategy, and in March 2007 a further binding target was set by the European Council <sup>(53)</sup> for 20 % of overall EU energy consumption to come from renewable energies by 2020.

A significant number of national measures <sup>(54)</sup> have already been implemented or are being planned to encourage consumption of renewables. These include economic, fiscal, regulatory (e.g. simplification of planning procedures), information and research. Further support for innovation and research will be coordinated at the Community level through a European Strategic Energy Technology Plan <sup>(55)</sup>. Measures aimed at reducing the growth in gross inland energy consumption, for example through energy savings and improving energy efficiency, will also influence the growth rate of this indicator.

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

NB: Other renewables, including solar, do not appear in the figure as they represent less than 1 % of the total.

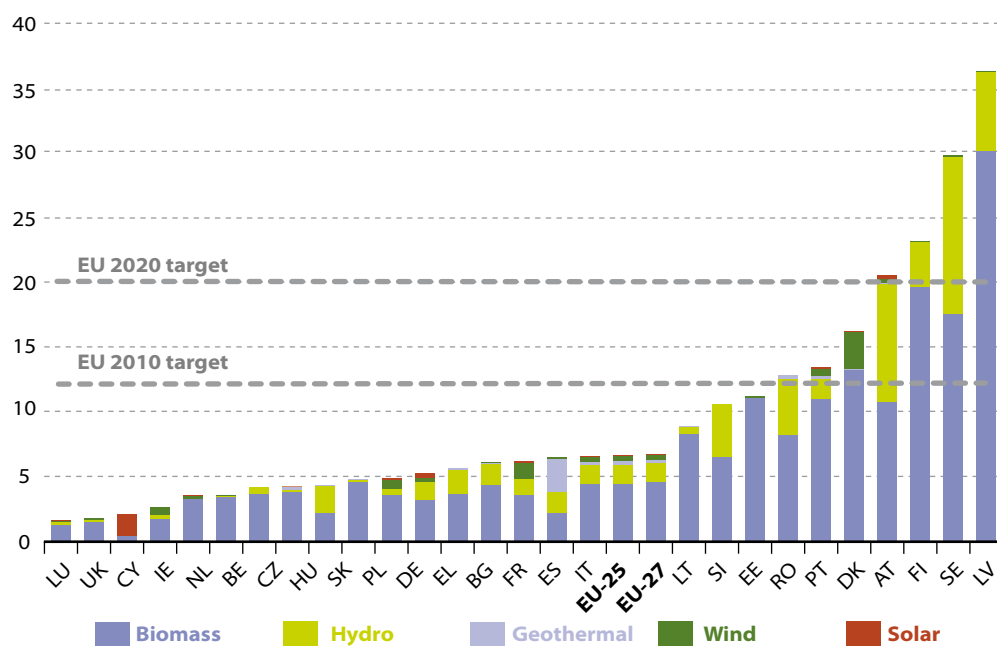
Source: Eurostat.



## Analysis

During the 1990s, the share of total renewables in EU-27 gross inland energy consumption grew at the average rate of 0.14 percentage points per year. Since then growth has been stronger, at 0.18 percentage points per year and the share stood at 6.7 % in 2005, which is substantially below the linear target path.

<sup>(55)</sup> Towards a European Strategic Energy Technology Plan, COM(2006) 847.



**Figure 2.6: Share of renewables in gross inland energy consumption in 2005 by country (%)**

NB: No data for Malta.

Source: Eurostat.

The renewable energy road map<sup>(56)</sup>, which sets out the EU's long-term strategy for renewable energy, explains some of the difficulties in meeting the target and concludes that 'the EU looks unlikely to reach a contribution from renewable energy sources exceeding 10 % by 2010'. Obstacles to progress include the relatively high cost of renewables due to the investment required and the absence of systematic inclusion of external costs in market prices; administrative hurdles, including the complexity of planning procedures and differences in standards and certification; rules governing grid access; lack of information for suppliers and consumers; and the fact that the target is expressed in terms of share of gross inland consumption. It is important to consider these obstacles in interpreting the indicator and to understand that there is a relatively long lead time in building up capacity.

The shares of all individual renewable energy sources in gross inland consumption grew over the decade to 2000. Since then the share of hydro has shrunk as a result of several years with low average rainfall.

The proportion of renewables in gross inland energy consumption varies widely across EU Member States, from 1.6 % in Luxembourg and 1.7 % in the UK to 29.8 % in Sweden and 36.3 % in Latvia in 2005. These latter two, along with Finland and Austria, have already exceeded the 2020 target level of 20 % for the Union as a whole. Denmark, Portugal and Romania have passed the 2010 target.

The dominant renewable source is biomass, representing 4.5 % of inland consumption in 2005, and 68 % of total renewables. Biomass provides 30 % of the gross inland energy consumption in Latvia, and nearly 20 % in Finland. Most of this is wood. Sweden is not far behind with 17.5 %. In Belgium, Estonia, Lithuania, Hungary, the Netherlands and Poland, more than 90 % of renewable energy is derived from biomass. It is also the fastest growing in terms of its share.

Second in overall importance is hydropower, which, however, actually decreased its share from 1.8 to 1.5 % over the period 2000 to 2005 due to several very dry years, also decreasing in absolute terms. Wind and geothermal are still relatively minor sources, representing between

<sup>(56)</sup> Renewable Energy Road Map — Renewable energies in the 21st century: building a more sustainable future, COM(2006) 848.

them only 0.6 % of EU-27 energy consumption in 2005, their shares growing only at 0.04 and 0.02 percentage points per year since 2000. Wind power is, however, a significant source in Denmark (18 % of renewables), Germany (14 %), Ireland (24 %) and Spain (21 %). And geothermal is the most important renewable energy source in Italy, where it represented 40 % of renewable energy in 2005. Solar energy represents less than 0.05 % of EU-27 gross inland energy consumption and only 0.7 % of renewables. It is, nevertheless, important in Cyprus, Greece and Austria. In Cyprus, solar contributes 1.7 % of gross inland energy consumption, representing 82 % of renewable energy.

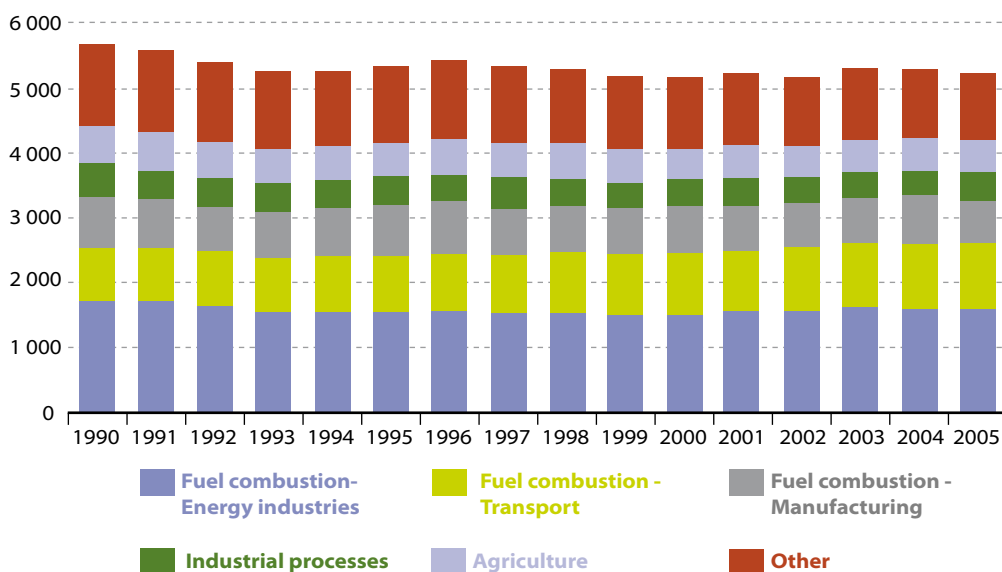
## Greenhouse gas emissions by sector



**Definition:** This indicator shows the contribution of the key **source categories to total greenhouse gas emissions**, and how these are changing over time. A key source category is defined as an emission source category that has a significant influence on a country's greenhouse gas inventory in terms of the absolute level of emissions, the trend in emissions, or both. The different greenhouse gases are weighted by their global warming potential, and the results are expressed in CO<sub>2</sub> equivalents (see methodological notes). In addition, the indicator reports on trends in emissions by international aviation and marine transport (bunkers) as well as in CO<sub>2</sub> removals by land use, land-use change and forestry.

Each sector of the economy contributes to a different extent towards total greenhouse gas emissions. By monitoring trends by sector, the indicator helps policy-makers to evaluate the efficiency of measures taken to cut greenhouse gas emissions and to identify the sectors where further measures should be implemented. According to Article 3.3 and 3.4 of the Kyoto Protocol, parties can make use of CO<sub>2</sub> removals by land use, land-use change and forestry activities, i.e. carbon sinks, to achieve their targets. International bunkers are not covered by the Kyoto Protocol but it is nonetheless important to monitor their progress as they represent more than 5 % of total greenhouse gas emissions and are growing rapidly.

### Indicator relevance



**Figure 2.7:** EU-27 emissions of greenhouse gases by sector (million tonnes CO<sub>2</sub> equivalents)

Source: European Environment Agency, Eurostat.

Fuel combustion by the energy industries, transport and manufacturing accounts for nearly two-thirds of total greenhouse gas emissions in the EU-27. However, whereas the shares of the energy industries and manufacturing have remained relatively constant over the past 15 years (at around 30 % and 14 %, respectively), that of transport has increased from 14 % to 19 %. The shares of the other sectors have all decreased moderately over the same period: industrial processes, from 8.4 % to 8.0 %; agriculture, from 10.6 % to 9.2 %; and other, from 22.0 % to 20.0 %.

### Analysis

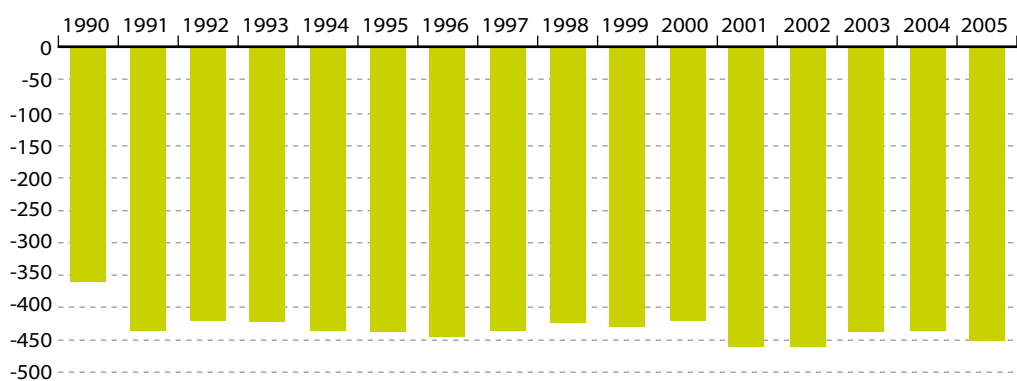
In absolute terms, emissions from all sectors except transport have reduced since 1990. Transport emissions grew at the average rate of 1.7 % per year during the 1990s, and at 1.3 % since then. Greenhouse gas emissions from the energy industries fell over the period 1990 to 2000 at the average annual rate of -1.3 %, but have grown since then at 1.0 % per year on average. In manufacturing, emissions from fuel combustion fell over the entire period, but since 2000 this reduction has been weaker (-0.5 % per year on average) than over the previous decade (-1.6 %).

For the remaining sectors, absolute emission levels experienced a downward trend between 1990 and 2000, varying between -1.5 % and -1.7 % per year on average. From 2000 onwards, emissions due to industrial processes grew by a modest 0.4 % annually. Agricultural emissions have fallen at the average rate of 1.1 % per year since 2000, mainly due to declining numbers of cattle (the largest single source of methane emissions) and lower emissions from agricultural soils (the largest emitter of nitrous oxide) as a result of lower fertiliser use<sup>(57)</sup>. In the 'other sectors', although emissions fell since 2000 at the average rate of 0.5 % per year, there are fluctuations in the trend due especially to the temperature-dependency of household fuel consumption.

<sup>(57)</sup> Annual European Community greenhouse gas inventory 1990-2005 and inventory report 2007. Submission to the UNFCCC Secretariat, European Environment Agency, Technical report No 7/2007.

**Figure 2.8: EU-27 net CO<sub>2</sub> removals by land use, land-use change and forestry activities (million tonnes CO<sub>2</sub> equivalents)**

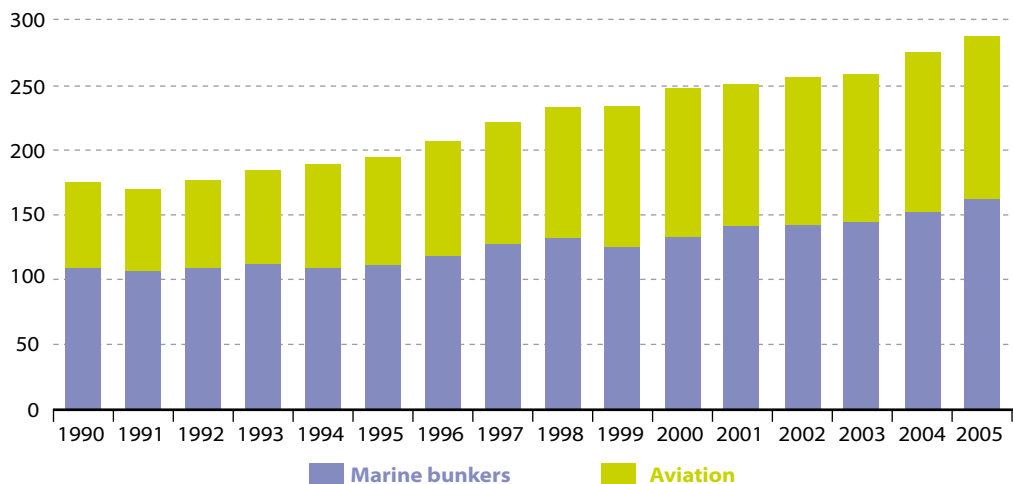
Source: European Environment Agency, Eurostat.



Land use, land-use change and forestry covers sinks as well as sources of CO<sub>2</sub> emissions. LU-LUCF contributes to climate change by reducing or increasing the capacity of land to store carbon (see methodological notes). The annual growth rate observed between 1990 and 2000 was about 1.3 % and about 1.5 % between 2000 and 2005. The major carbon sink is forest land, which is responsible for between 115 and 121 % of the net removals. On the other hand, croplands and grasslands are net emitters of greenhouse gases. The net CO<sub>2</sub> removal by forestry and soil was in the region of 8.7 % of total emissions in CO<sub>2</sub> equivalents in 2005.

**Figure 2.9: EU-27 emissions of greenhouse gases by international bunkers (million tonnes CO<sub>2</sub> equivalents)**

Source: European Environment Agency, Eurostat.



Owing to the complexity of allocating the emissions from international aviation and shipping to any particular country, they are not included in the total greenhouse gases reported through the Kyoto Protocol, but are treated separately. Both are growing at an extraordinarily high rate. During the 1990s, emissions from international shipping grew at 2.1 % per year on average, growing to 3.9 % per year between 2000 and 2005. The growth rates of emissions from international aviation are even higher: 5.4 % per year in the 1990s, and on average 2.4 % per year since then. This last figure masks, however, the effect of the 11 September 2001 attacks on the World Trade Center in New York, which temporarily dampened considerably the growth in air traffic. The growth rate of greenhouse gas emissions from international aviation between 2004 and 2005 was 5.1 %. Together, these emissions were equivalent to 5.6 % of the total emissions in 2005, having risen from 3.1 % in 1990.

It should be noted that emissions of greenhouse gases from aviation have additional impacts on climate, including a radiative forcing potential, which are not accounted for in the concept of CO<sub>2</sub> equivalents (see methodological notes).

## Climate change

## Greenhouse gas intensity of energy consumption

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



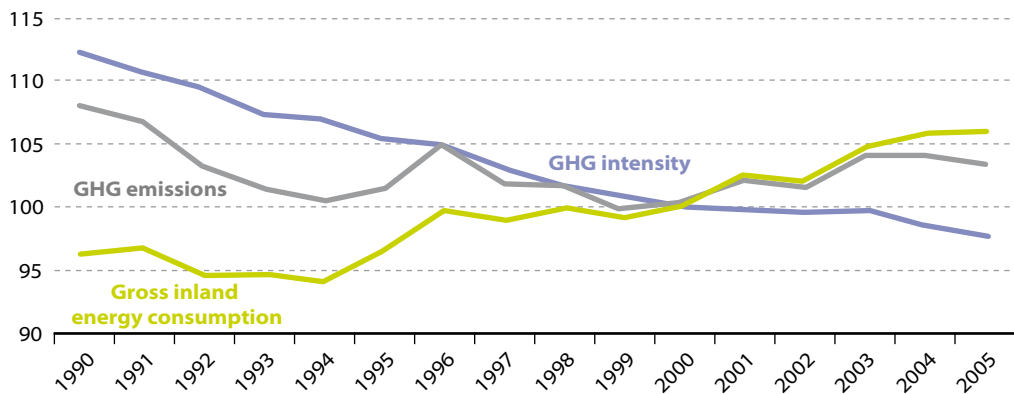
## Indicator relevance

Each type of fossil fuel contains a different amount of carbon for each unit of energy it is capable of producing. High carbon-content fuels include lignite and coal, whilst natural gas is a relatively low-carbon fuel<sup>(58)</sup>. Switching to lower carbon fuels reduces greenhouse gas emissions even without reducing overall energy consumption. This indicator is of use in tracking progress towards a number of objectives of the 2006 renewed sustainable development strategy. These include the key objective of environmental protection, achieving the Kyoto commitment of an 8 % reduction in greenhouse gas emissions and improvement of the environmental performance of processes.

<sup>(58)</sup> Burning natural gas results in approximately 41 % less CO<sub>2</sub> emissions than coal, or 45 % less than lignite, to produce the same quantity of energy.

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

Source: European Environment Agency, Eurostat.



## Analysis

The greenhouse gas intensity of energy consumption fell by 1.1% year on average over the decade to 2000, despite the 0.4 % average annual growth in gross inland energy consumption. This was mainly the result of falling emissions (-0.8 % per year on average) following the switching from solid fuels to gas and to a lesser extent to nuclear and renewables (see indicator on gross inland energy consumption).

Between 2000 and 2005, energy consumption grew at the considerably higher average rate of 1.1 % per year, reflecting increasing energy demand, especially from transport and households, while greenhouse gas emissions increased by 0.6 % on average. Reflecting these trends, the greenhouse gas intensity continued to decline but at the substantially lower rate of 0.5 % per year.



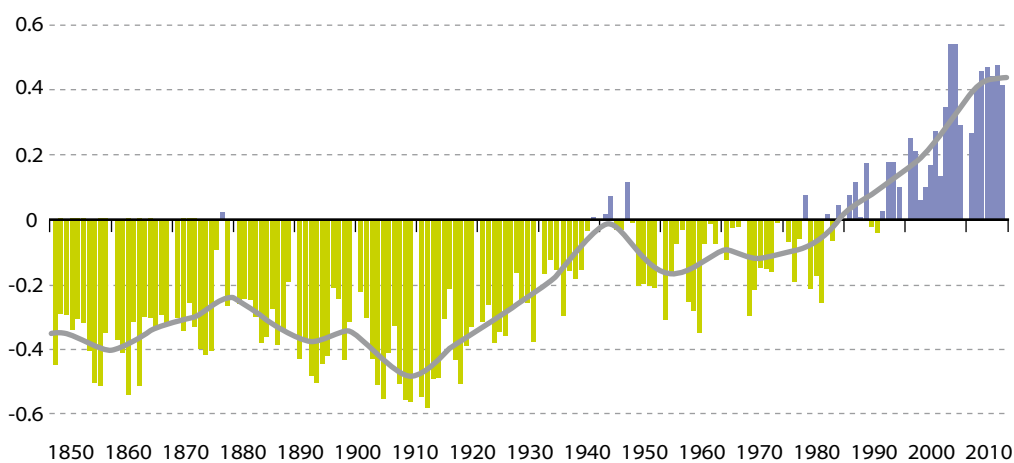
## Global surface average temperature



**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.

According to the IPCC's Fourth Assessment Report <sup>(59)</sup>, 'warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level' and 'most of the observed increase in globally averaged temperatures since the mid-20th century is very likely <sup>(60)</sup> due to the observed increase in anthropogenic greenhouse gas concentrations'. It also warns that 'continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century'. Results for different emission scenarios estimate that this warming is likely to fall within the range of 1.1–6.4 °C, with a best estimate between 1.8 and 4.0 °C. Moreover, even if greenhouse gas emissions were to be stabilised, 'anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and feedbacks'. A second volume of the report <sup>(61)</sup> states that 'observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases'. However it also points out that 'many impacts can be avoided, reduced or delayed by mitigation' and 'future vulnerability depends not only on climate change but also on development pathway'.

An objective of the 2006 renewed sustainable development strategy is to limit the rise in the global surface average temperature to less than 2 °C compared to the pre-industrial level <sup>(62)</sup>, as initially agreed by the June 1996 Environment Council <sup>(63)</sup>. This objective represents a threshold, beyond which there is an increased risk of irreversible damage to ecosystems and accelerated or runaway climate change <sup>(64)</sup>.



### Indicator relevance

<sup>(59)</sup> IPCC, 2007: 'Summary for policymakers' in *Climate change 2007: The physical science basis*. Contribution of working group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. CUP, Cambridge, UK and New York, USA.

<sup>(60)</sup> The term 'very likely' indicates an assessed likelihood, using expert judgement, of an outcome or a result greater than 90 %. The term 'likely' represents a probability greater than 66 %.

<sup>(61)</sup> *Climate change 2007: Climate change impacts, adaptation and vulnerability*. Contribution of working group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

<sup>(62)</sup> 'Pre-industrial' is defined by IPCC as the situation in 1750.

<sup>(63)</sup> Conclusions of the Environment Council, 25 June 1996.

<sup>(64)</sup> Meeting the climate challenge: Recommendations of the International Climate Change Taskforce, 2005.

**Figure 2.11: Global annual mean temperature deviations, 1850-2006 (temperature deviation, compared to 1961-1990 average in °C)**

Source: Climatic Research Unit, School of Environmental Sciences, University of East Anglia and Hadley Centre for Climate Prediction and Research, UK Meteorological Office.

## Analysis

The current indicator, beginning in 1850 and providing the deviation from the average 1961 to 1990 temperature, can be used to monitor temperature changes since the mid-19th century but cannot be used to precisely monitor the objective with respect to the pre-industrial level.

<sup>(65)</sup> Section 3.2.2.6 of *Climate change 2007: the physical science basis*. Contribution of working group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

The global average surface temperature trend <sup>(65)</sup> has very likely been slightly more than  $0.65\text{ °C} \pm 0.2\text{ °C}$  over the period from 1901 to 2005, a warming greater than any since at least the 11th century. The linear trend over the 1906–2005 period yields a warming of  $0.74\text{ °C} \pm 0.18\text{ °C}$ , but this rate almost doubles for the last 50 years ( $0.64\text{ °C} \pm 0.13\text{ °C}$  for 1956 to 2005). The changes are not linear and can also be characterised as level prior to about 1915, a warming to about 1945, levelling out or even a slight decrease until the 1970s, and a fairly linear upward trend since then. Considered this way, the overall warming from the average of the first 50-year period (1850 to 1899) through 2001 to 2005 is  $0.76\text{ °C} \pm 0.19\text{ °C}$ . The last 12 complete years (1995 to 2006) contain 11 of the 12 warmest years since 1850, the earliest year for which comparable records are available. The surface warming trend over 1979 to 2005 was more than  $0.16\text{ °C}$  per decade, that is, a total warming of  $0.44\text{ °C} \pm 0.12\text{ °C}$ . Between 2001 and 2005, the global average temperature anomaly has been  $0.44\text{ °C}$  above the 1961-1990 average. The value for 2006 is close to the 2001-2005 average.

## Energy dependency



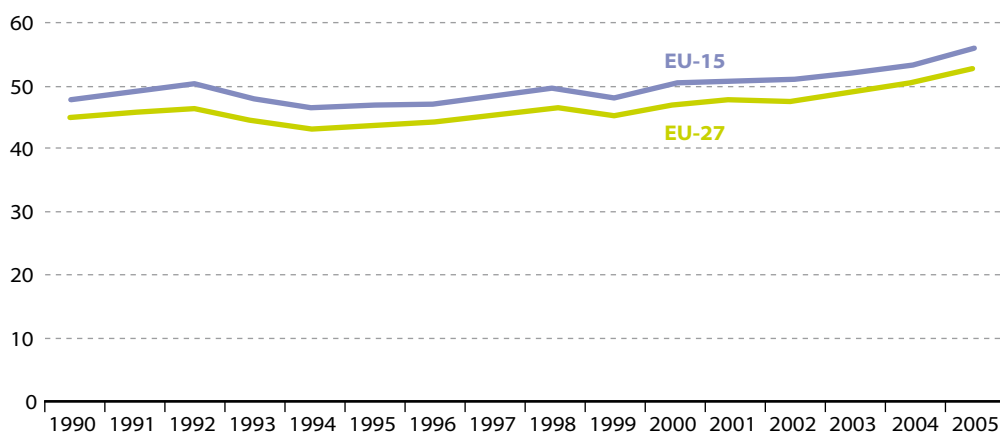
**Definition:** Energy dependency shows the extent to which an economy relies upon imports in order to meet its energy needs. It is calculated as **net imports divided by the sum of gross inland energy consumption plus bunkers**.

An objective of the 2006 renewed sustainable development strategy is that energy policy should be consistent with the objectives of security of supply. Reliance on energy supplies from outside the EU carries potential economic and social risks associated with the economic and political stability of the regions of the supplier nations, principally in the former Soviet Union and the Middle East.

The Green Paper on a European strategy for sustainable, competitive and secure energy<sup>(66)</sup> describes security of energy supply, together with sustainability and competitiveness, as the three main objectives for EU energy policy. It considers that the EU's rising dependence on imported energy needs to be tackled through reducing demand, diversifying the energy mix with greater use of competitive indigenous and renewable energy, and diversifying sources and routes of supply of imported energy.

### Indicator relevance

<sup>(66)</sup> Green Paper on a European strategy for sustainable, competitive and secure energy, COM(2006) 105.



**Figure 2.12:** Energy dependency rate for all products (%)

Source: Eurostat.

The rate of energy dependency rose and fell repeatedly throughout the 1990s. Nevertheless, in 2000 it stood at 46.7 % for EU-27, 2.3 percentage points higher than in 1990, and representing an average increase of 0.2 percentage points per year over the decade as a whole. In 2004, the EU-27 exceeded 50 % dependence on imports, the dependency rate having risen in each year since 2000 at an average of 1.1 percentage points per year to reach 52.3 % in 2005. The energy dependency of the EU-15 has followed a similar pattern to that of EU-27, albeit about 3 percentage points higher.

### Analysis

## Energy

## Gross inland energy consumption

**Definition:** Gross inland energy consumption (GIC) is the quantity of energy consumed within the borders of a country. It is calculated as **total domestic energy production plus energy imports minus energy exports** (including fuel supplied to international marine bunkers). The indicator is broken down by the major classes of energy source.



## Indicator relevance

Whilst there is no explicit objective in the EU sustainable development strategy for the level of gross inland energy consumption or the mix of energy sources (with the exception of renewables), this indicator is fundamental to an understanding of many of the issues related to this theme, such as security of supply, greenhouse gas emissions, air pollutant emissions, and radioactive waste generation.

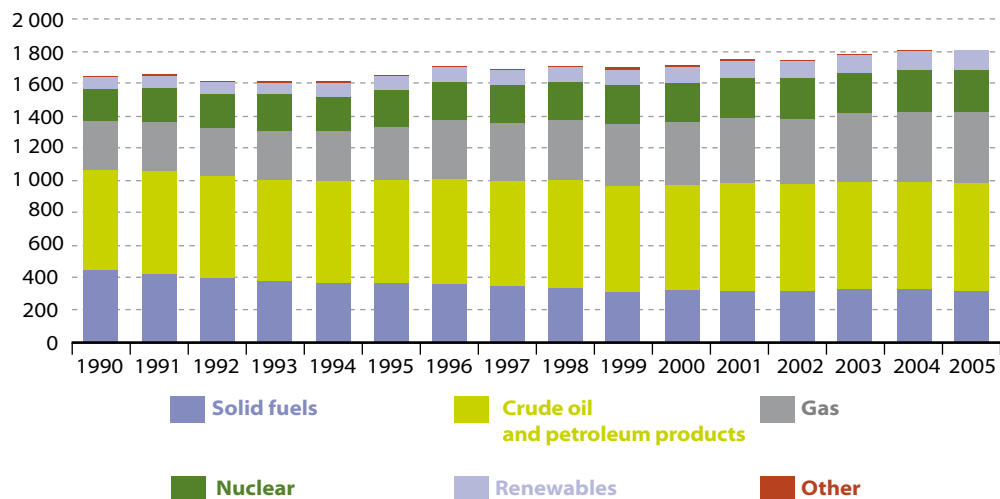
The burning of fossil fuels (coal, lignite, oil and natural gas) is the largest source of carbon dioxide emissions, whilst the extraction of coal, oil and gas as well as leaks from gas pipelines are among the main sources of methane emissions. Therefore, most measures to reduce greenhouse gas emissions target energy consumption in one way or another. One such measure involves shifting from solid fuels, which are high-carbon sources, to lower-carbon sources, such as natural gas. Other measures include reducing consumption of fossil fuels and increasing the use of renewable energy sources, as well as measures aimed at improving energy efficiency, such as cogeneration (combined heat and power generation). The 2007 spring European Council stressed the need to increase energy efficiency in the EU so as to achieve the objective of saving 20 % of the EU's energy consumption compared to projections for 2020, as estimated by the Commission in its Green Paper on energy efficiency<sup>(67)</sup>. The Commission's action plan for energy efficiency<sup>(68)</sup> outlines a framework of policies and measures to achieve this objective.

<sup>(67)</sup> Green Paper on energy efficiency or doing more with less, COM(2005)265.

<sup>(68)</sup> Action plan for energy efficiency: realising the potential, COM(2006) 545.

**Figure 2.13:** EU-27 gross inland energy consumption by energy source (million tonnes of oil equivalent)

Source: Eurostat.



## Analysis

Gross inland consumption grew in the EU-27 at an average rate of 0.4 % per year between 1990 and 2000. Whilst the use of solid fuels, such as coal and lignite, fell at an average rate of 3.3 %

per year, there was strong growth in the use of gas (+2.9 %) and renewables (+3.2 %), and to a lesser extent nuclear (+1.9 %). Consumption of petroleum products remained relatively stable, growing at only 0.4 % per year on average.

Growth has been considerably stronger during the period 2000-2005, at 1.1 % per year on average for total inland consumption. The average annual growth rate of renewables rose to 4.1 % and that of petroleum products remained similar to its level during the 1990s, at 0.5 %. The other energy sources have experienced lower growth rates over this period (2.5 % for gas and 1.1 % for nuclear), with the consumption of solid fuels remaining relatively stable (average growth rate of -0.1 % per year). As can be seen from the indicator on final energy consumption by sector (see sustainable consumption and production), the driving force for this growth has been an increased energy demand, especially from industry, transport and households.

Overall, there has been a major shift away from solid fuels, which represented 27 % of the total in 1990 and only 18 % in 2005. This shift has been predominantly in favour of gas, rising from 18 to 25 % over the same period, and to a lesser extent nuclear (rising from 12 to 14 %) and renewables (4 to 7 %). The share of petroleum products has hardly changed over the period, standing at 38 % in 1990 and 37 % in 2005.

## Energy



## Electricity generation from renewables

**Definition:** The indicator is defined as the percentage **share of renewables in gross national electricity consumption**, measured in kilowatt hours.



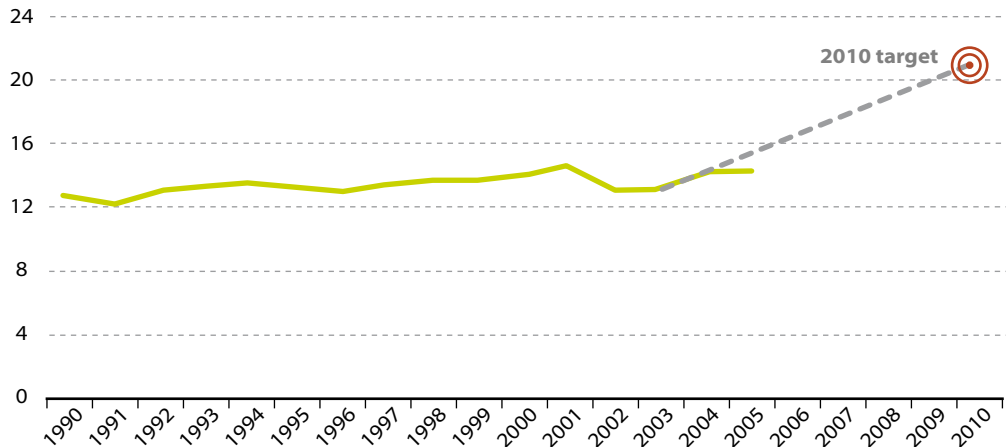
### Indicator relevance

<sup>(69)</sup> Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market.

In 2001 the directive on electricity production from renewable energy sources <sup>(69)</sup> established a framework intended to increase the share of renewables in gross electricity consumption to 22.1 % for EU-15 by 2010, later modified to 21 % for EU-25. This target was reaffirmed in the renewed sustainable development strategy.

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

Source: Eurostat.



### Analysis

During the 1990s the share of electricity consumption generated from renewable energy sources in the EU-27 grew at an average rate of 0.14 percentage points per year, slowing down to 0.04 between 2000 and 2005. One factor in this recent slow growth rate has been the low amounts of hydro generation due to several dry years.

The share reached 14 % in 2005, having gained a mere 1.6 percentage points since 1990. There remain 7 percentage points to reach the 2010 target of 21 %, which will require an average annual growth rate of 1.4 percentage points, equivalent to the entire growth over the previous decade.

Although progress appears slow it should be borne in mind that there is a relatively long lead time needed to build up generating capacity. Furthermore, 'the challenge for renewables policy is to find the right balance between installing large-scale renewable energy capacity today and waiting until research lowers their cost tomorrow' <sup>(70)</sup>. See also the discussion under the headline indicator, share of renewables in energy consumption.

<sup>(70)</sup> An energy policy for Europe, COM(2007) 1.

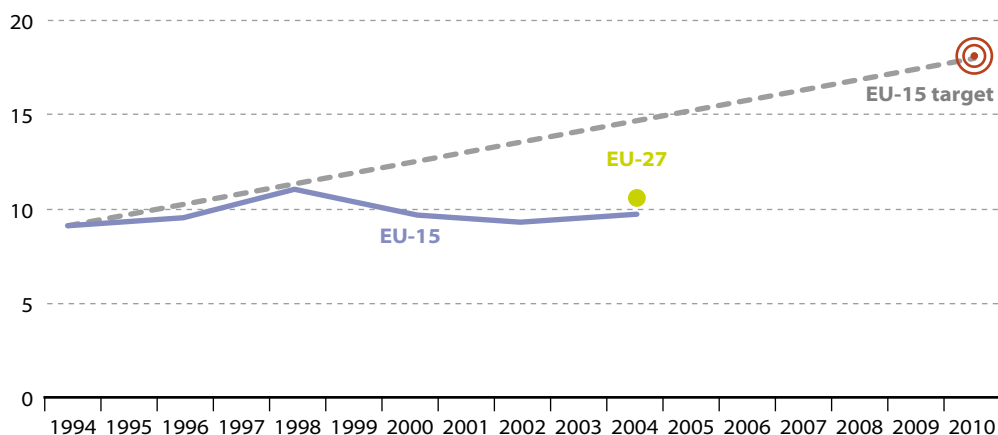
## Combined heat and power



**Definition:** This indicator is defined as the **share of electricity from combined heat and power (CHP) generation** as a percentage of gross electricity generation.

Combined heat and power or cogeneration is a technology used to improve energy efficiency through the simultaneous generation of heat and power in the same process. Heat delivered from CHP plants may be used for process or space-heating purposes in any sector of economic activity including the residential sector. CHP thus reduces the need for additional fuel combustion for the generation of heat and avoids the associated environmental impacts, such as CO<sub>2</sub> emissions.

There is an indicative EU-15 target of doubling the share of total gross electricity production from cogeneration from the 1994 level of 9 % to 18 % by 2010 <sup>(71)</sup>. The CHP directive <sup>(72)</sup> encourages Member States to carry out analyses of their potential for 'high-efficiency cogeneration' which is defined as cogeneration providing at least 10 % energy savings compared to separate production. The renewed sustainable development strategy calls for further promotion of CHP in order to increase the global efficiency of power-stations.



### Indicator relevance

<sup>(71)</sup> Community strategy to promote combined heat and power (CHP) and to dismantle barriers to its development, COM (97) 514.

<sup>(72)</sup> Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC.

**Figure 2.15:** Combined heat and power generation (% of gross electricity generation)

**NB:** Due to the gradual refinement of the methodology for this indicator, there is little comparability over the time series.

Source: Eurostat.

Although the amount of electricity produced from CHP increased in the majority of countries over the last 10 years, it would appear that the EU-15 is not on track to meet the indicative target to double the share of CHP between 1994 and 2010. However, it is difficult to draw any definitive conclusions on progress towards the target because the methodology, which exerts a strong influence on the indicator, has been evolving over the course of time (see methodological notes). It is worth noting the adverse market conditions in many Member States in recent years <sup>(73)</sup>, including increasing prices for natural gas, the main fuel used in new CHP plants, and the changing regulatory environment resulting from the liberalisation of the electricity market.

### Analysis

<sup>(73)</sup> 'Combined heat and power', Fact sheet EN20, European Environment Agency, April 2007.

## Energy

## Consumption of biofuels

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



## Indicator relevance

<sup>(74)</sup> Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport.

<sup>(75)</sup> Presidency conclusions of the Brussels European Council, 8 and 9 March 2007.

<sup>(76)</sup> An EU strategy for biofuels, COM(2006) 34.

<sup>(77)</sup> Annex to the Communication from the Commission on an EU strategy for biofuels – Impact assessment, SEC(2006) 142.

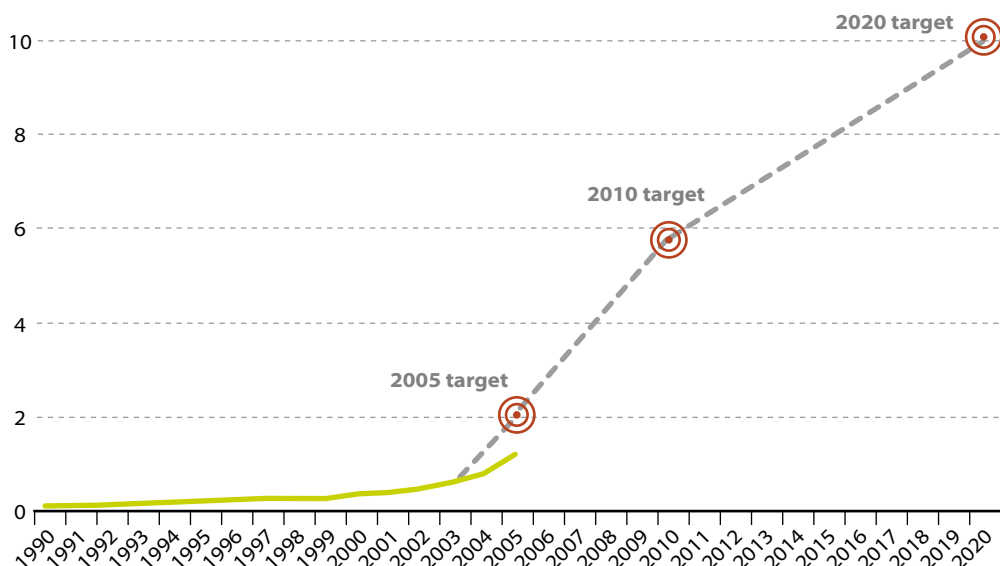
<sup>(78)</sup> 'Sustainable bioenergy: A framework for decision makers', UN-Energy publication, May 2007.

In 2006, the renewed sustainable development strategy reaffirmed the indicative target for 31 December 2010 of a 5.75 % share of biofuels and other renewable fuels in petrol and diesel used for transport as set in the biofuels directive <sup>(74)</sup>. This directive also set an indicative target of 2 % to be achieved by 31 December 2005. In March 2007, the European Council <sup>(75)</sup> further endorsed a 10 % binding minimum target to be achieved by all Member States, to be introduced in a cost-efficient way, and 'subject to production being sustainable'.

Biofuels are seen as one of the main ways in which the growing share of transport in greenhouse gas emissions can be curbed and of how the EU can become less dependent on imports of oil <sup>(76)</sup>. In addition biofuel production could boost employment and incomes in rural regions, although studies have shown widely varying figures on the net employment effect <sup>(77)</sup>. Nevertheless, there are also concerns about the sustainability of biofuel production, and potential negative impacts on the environment if not adequately managed. Current methods of biofuel production are uneconomical without tax relief or other kinds of subsidy, and subsidies introduce distortions into the market. The current generation of biofuels produce only marginal savings in greenhouse gas emissions. Although biofuel production in developing countries is an opportunity towards economic development there is also the risk that it could lead to deforestation or the conversion of productive land which could otherwise be used for food production <sup>(78)</sup>.

**Figure 2.16: EU-27 share of biofuels in total fuel consumption of transport (%)**

Source: Eurostat.





Between 1990 and 2000 the EU-27 share of biofuels in the petrol and diesel consumption of transport increased from close to zero to 0.24 % representing an average increase of 0.02 percentage points per year. From 2000 to 2005 the average year-on-year change was somewhat larger at 0.17 percentage points, and there are indications that the trend is accelerating. The share in 2005 stood at 1.08 %.

## Analysis

## Energy

## Implicit tax rate on energy

**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.



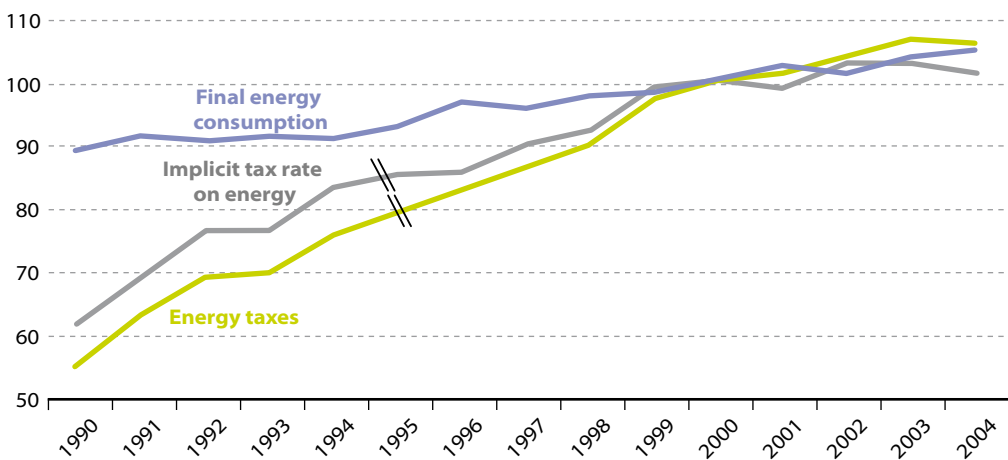
## Indicator relevance

<sup>(79)</sup> Council Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity, replacing, with effect from 1 January 2004, Council Directive 92/81/EEC on the harmonisation of the structures of excise duties on mineral oils and Council Directive 92/82/EEC on the approximation of the rates of excise duties on mineral oils.

Many countries have set up energy taxes as an economic instrument aimed at implementing environmental liability and achieving the Kyoto Protocol objectives. The energy taxation directive <sup>(79)</sup> defines the levels of taxation to be imposed on energy products and electricity. These levels of taxation do not directly reflect the carbon content of the fuels as they are not only meant to address climate change effects since the consumption of energy products has a number of adverse environmental impacts. The renewed sustainable development strategy asks Member States to consider further steps to shift taxation from labour to resource and energy consumption and/or pollution, to contribute to the EU goals of increasing employment and reducing negative environmental impacts in a cost-effective way.

**Figure 2.17:** EU-15 implicit tax rate on energy, energy taxes and final energy consumption (index 2000=100)

NB: Break in series in 1995.  
Source: Eurostat.



## Analysis

Final energy consumption in the EU-15 has risen at the steady rate of 1.2 % per year on average over the entire period 1990 to 2004. Between 1990 and 2000, the revenues raised from energy taxes grew at the faster average rate of 6.3 % per year and the implicit tax rate on energy at about 5 % per year. Since 2000, growth in the revenues from energy taxation has slowed down to 1.4 % per year, and the implicit tax rate on energy to 0.3 %. This slow down in the growth of the implicit tax rate shows that there has been little further increase in the effective tax burden on energy related to the potentially taxable base. This is not in line with the reviewed strategy's requirement to shift taxation from labour to resource and energy consumption (see also the relative shares of environmental and labour taxes in the good governance chapter).

## Methodological notes

### Greenhouse gas emissions <sup>(80)</sup>

Greenhouse gas emissions in EU Member States are reported to the United Nations Framework Convention on Climate Change (UNFCCC) under the UNFCCC and its Kyoto Protocol, as well as to the European Commission under the mechanism for monitoring Community greenhouse gas emissions <sup>(81)</sup>. The Kyoto Protocol lays down that anthropogenic emissions of the six greenhouse gases are to be aggregated using their global warming potential (GWP), which ranges from 1 (CO<sub>2</sub>) to 23 900 (SF<sub>6</sub>). The GWP of methane is estimated to be 21, and for nitrous oxide it is 310. HFCs and PFCs comprise a large number of different gases that have different GWPs <sup>(82)</sup>. The indicator does not include ozone depleting substances with global warming properties covered by the Montreal Protocol (1997).

The five-year average emission level during 2008 and 2012 is the basis for assessing compliance with the Kyoto target <sup>(83)</sup>. The EU Member States and candidate countries have differing targets under the Protocol. No targets exist for Cyprus, Malta and Turkey. Hungary and Poland have reduction targets of 6 % from the base year, while the others have reduction targets of 8 %. In general, the Kyoto base year is 1990 for non-fluorinated gases (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O), and 1995 for fluorinated gases (HFC, PFC and SF<sub>6</sub>). Exceptions are:

- Austria, France, Italy and Slovakia have 1990 as the base year also for fluorinated gases,
- Poland has 1988, and Slovenia has 1986 as the base year for non-fluorinated gases (and 1995 for fluorinated gases),
- Bulgaria has 1988 as the base year for all greenhouse gases,
- Hungary has the average 1985-87 as the base year for non-fluorinated gases (and 1995 for fluorinated gases),
- Romania has 1989 as the base year for all greenhouse gases.

The EU base year emissions are the sum of the base year emissions of the Member States.

The European Community and its Member States use the 'UNFCCC guidelines on reporting and review' (Document FCCC/CP/2002/8), and prepare inventory information in the common reporting format (CRF), and the 'national inventory report' that contains background information. The emissions of the different sources are reported in the Intergovernmental Panel for Climate Change (IPCC) nomenclature <sup>(84)</sup>. The definitions do not coincide with the NACE <sup>(85)</sup> nomenclature. The source categories in the highest aggregated IPCC levels are the following:

1. Energy (1A fuel combustion activities and 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 fuel combustion for energy use in industry and in agriculture, as well as waste incineration with energy use are part of the IPCC category 1, 'energy'. In principle, transport (IPCC category 1A 3) is part of the energy sector but it is presented separately here. The source categories 3 (solvent and other product use), 6 (waste) and 7 (other) are added with the non-resolved sectors of the fuel combustion and the fugitive emissions from fuel and presented here as 'others'. The IPCC category 5 'land-use change and forestry' is excluded.

Land use, land-use change and forestry have impacts on the global carbon cycle and as such these activities can add or remove CO<sub>2</sub> from the atmosphere, contributing to climate change. According to the Kyoto Protocol, parties can use the net changes in greenhouse gas emissions from sources and removals by sinks resulting from direct human-induced land-use change and forestry activities (limited to afforestation, reforestation, and deforestation since 1990) to meet the commitments (Kyoto forests).

Emissions from international aviation and marine fuel use (bunkers) are not covered by the Kyoto Protocol but reported under memo items. The concept of global warming on a 100-year horizon neglects important parts of the climate impact from aviation. Gases other than the Kyoto basket (e.g. NO<sub>x</sub>, SO<sub>x</sub>, water vapour) and particles have shorter atmospheric residence times and remain concentrated near flight routes but have an important contribution to the energy balance of the earth-atmosphere system (measured in watts per square metre). These emissions can lead to radiative forcing that is regionally located near the flight routes for some components (e.g., ozone and contrails) in contrast to emissions that are globally mixed (e.g., carbon dioxide and methane). The GWP as used here is based on a 100-year time horizon and the data are expressed in CO<sub>2</sub> equivalents neglecting gases other than the Kyoto basket. There is, however, little scientific understanding of these effects.

<sup>(80)</sup> Greenhouse gas emissions data for the European Union are compiled and published by the European Environment Agency: see the EEA GHG data viewer at <http://dataservice.eea.europa.eu/dataservice/viewdata/viewpvt.asp?id=418>

<sup>(81)</sup> Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

<sup>(82)</sup> IPCC, 1996. *Climate change 1995: The science of climate change*. Intergovernmental Panel on Climate Change; Houghton, J. T., Meira Filho, L. G., Callander, B. A., Harris, N., Kattenberg, A., and Maskell, K. (eds) CUP. Cambridge, UK.

<sup>(83)</sup> Article 3, Council 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.

<sup>(84)</sup> IPCC, 1997. *Revised 1996 IPCC guidelines for national greenhouse gas inventories*, Houghton, J. T., Meira Filho, L. G., Lim, B., Treanton, K., Mamaty, I., Bonduki, Y., Griggs, D. J., and Callander, B. A. (eds) IPCC/OECD/IEA. UK Meteorological Office, Bracknell.

<sup>(85)</sup> Statistical classification of economic activities in the European Community.

### Greenhouse gas intensity of energy consumption

Greenhouse gas emissions from the IPCC source category 1 'energy' cover: energy industries (CRF 1A1) + fugitive emissions (CRF 1B) + industry (energy) (CRF 1A2) + road transport + other transport (CRF 1A3) + residential + services, agriculture and other sectors (CRF 1A4 + CRF 1A5).

Gross inland consumption represents the quantity of energy necessary to satisfy inland consumption of the geographical entity under consideration (see below).

### Global surface average temperature

Adapted from copyright data supplied by the UK Meteorological Office and the University of East Anglia. The data are 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 and are available online at <http://www.cru.uea.ac.uk> and <http://www.hadobs.org>. The time series used in this publication is based on the HadCRUT3 dataset <sup>(86)</sup> and was downloaded from the page <http://www.cru.uea.ac.uk/cru/info/warming/>. Further information on the dataset is available at <http://www.cru.uea.ac.uk/cru/data/temperature/>.

### Energy statistics

Annual energy statistics are collected through the joint Eurostat/IEA/UNECE questionnaires. Methodological information on the annual joint questionnaires and data compilation can be found in Eurostat's web page for metadata on energy statistics which is available on the Eurostat website.

### Consumption of renewables

The main sources of renewable energy are broken down in the following categories:

- hydro-power: potential and kinetic energy of water converted into electricity in hydroelectric plants,
  - geothermal energy: energy available as heat emitted from within the Earth's crust, usually in the form of hot water or steam,
  - wind energy: kinetic energy of wind exploited for electricity generation in wind turbines,
  - solid biomass: 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,
- other renewables:
- solar energy: 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,
  - tide/wave/ocean energy: mechanical energy derived from tidal movement or wave motion and exploited for electricity generation,

- biogas: a gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass,
- liquid biofuels: bio-ethanol, bio-diesel, bio-methanol, bio-dimethylether, bio-oil,
- wastes: industrial wastes, municipal solid waste.

See also 'gross inland energy consumption' below.

### Energy dependency

Net imports are calculated as total imports minus total exports. Gross inland consumption represents the quantity of energy necessary to satisfy inland consumption of the geographical entity under consideration (see above notes). Bunkers cover the quantities delivered to seagoing vessels of all flags.

The energy dependency rate may be negative in the case of net exporter countries while positive values over 100 % indicate the build-up 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. The renewable electricity directive <sup>(87)</sup> 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)

It should be noted that because the methodology has evolved over time there is no reliable time series currently available. 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.

The pilot projects 1994-1998 used broadly similar, but ill-defined, methodologies. Gross electricity generation was considered to be equal to CHP electricity generation except in the following, loosely defined conditions:

<sup>(86)</sup> 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, D12106, doi:10.1029/2005JD006548.

<sup>(87)</sup> Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market.

1. marginal CHP units with a heat/power capacity ratio less than 0.25,
2. steam units with condensing turbine operated with low heat production in relation to electricity generation,
3. gas turbines or internal combustion engines, which could be operated without heat recovery, whenever the heat production is low in relation to electricity generation.

For these three cases the CHP electricity was calculated by dividing the CHP heat production by the default heat-to-power ratio, depending on the type of the prime mover.

For the reference year 2000 the methodology was improved to have an efficiency threshold of 75 % above which all electricity was considered CHP electricity. If the annual efficiency was below this threshold the CHP electricity was calculated by multiplying the CHP heat generation with the real power-to-heat ratio. The default values for the power-to-heat ratio were modified from the 1998 exercise and they were supposed to be used only if the real values were not known.

CHP statistics for 2002 in the EU-15 were collected in a project funded under the EU SAVE programme. Statistics for the newer Member States were collected in the framework of the Phare programme.

The method used to calculate CHP electricity for 2002 was based on the same principles as applied in Directive 2004/8/EC. The overall efficiency of a CHP unit was used as a measure to determine whether the electricity generation is fully CHP or not. If the overall efficiency is above a threshold set at 75 % (85 % for steam condensing extraction turbines and combined cycle units), all the electricity generated is considered as CHP electricity. On the other hand, if the overall efficiency is below the threshold, the amount of CHP electricity, ECHP is calculated as:

$$ECHP = C \cdot H$$

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

Data were collected at unit level applying either real  $C$  factors or default  $C$  values defined in the methodology for different types of plants.

Currently there is a legal obligation <sup>(88)</sup> for Member States to submit statistics on CHP to the Commission. Guidelines for implementation of the directive are being prepared by the Commission. Only after the guidelines are finished and the Member States report according to the guidelines can the indicator be used without reservations. Directive 2004/8/EC sets the efficiency thresholds at levels defined by the Member States at least to 75 % (80 % for steam condensing extraction turbines and combined cycle units). The 2003 and 2004 statistics are compiled using the efficiency thresholds of the directive.

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

### Consumption of biofuels

According to Directive 2003/30/EC <sup>(89)</sup>, 'biofuels' means liquid or gaseous fuel for transport produced from biomass; and '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), bio-dimethylether (a diesel quality fuel produced from biomass).

### Energy tax revenue

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

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

<sup>(88)</sup> Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market.

<sup>(89)</sup> Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport.



# Sustainable transport

# 3

**Strategy objective:**

*'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'*



## Policy Background

Transport is of fundamental importance to human society, providing mobility and facilitating industry and trade. About 5.7 % of the EU population work directly for the transport services sector <sup>(90)</sup>, and a further 1.5 % in vehicle manufacturing, with additional transport-related jobs in other sectors, such as infrastructure construction and maintenance. Value added by the transport sector amounts to some 7.1 % of GDP and vehicle manufacturing contributes a further 1.8 %, whilst about 13.5 % of household spending is on transport. There is also considerable public and private investment in transport infrastructure. The sector is thus of considerable economic importance.

However, not all operators believe they are working in a truly equitable market. And not all regions or households have equal access to the benefits of transport. Nor is transport only beneficial. Tens of thousands die on the roads each year in Europe (nearly 45 000 in the EU-27 in 2005), as well as rather lower numbers in aviation, shipping and railway accidents. There are also many environmental impacts, including land take and fragmentation of natural habitats, climate change, noise, and air, soil and water pollution, which also contribute to human health problems. In addition, ever-increasing delays and congestion on roads, railways and at airports are of continuing concern as they translate into important productivity loss.

The essential economic and social benefits, which are so difficult to balance against the high social and environmental costs, make transport a crucial sector for sustainable development, as recognised in the EU sustainable development strategy. The renewed strategy of June 2006 states as the overall objective for sustainable transport that our transport systems should 'meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment'. It also identifies operational objectives and targets which address the main economic, environmental and safety impacts of transport.

Many of the social and environmental costs of transport are not confined to those who are responsible for them, but paid by society as a whole. How to reconcile these conflicting costs and benefits, and how to introduce more equity into transport markets, were already subjects of the 1992 White Paper on the future development of the common transport policy <sup>(91)</sup>. The idea that the imbalances and inefficiencies of European transport systems could be corrected by appropriate pricing structures was developed further in the 1995 Green Paper on transport <sup>(92)</sup>. In 2001, the Commission issued a further White Paper <sup>(93)</sup> which sets out a comprehensive strategy, including over 60 specific measures, to break the link between transport growth and economic growth and to restore the balance between the modes.

In its mid-term review <sup>(94)</sup> of the 2001 White Paper, the Commission reaffirmed and refined the approach of the 1992 and 2001 White Papers, arguing for a comprehensive, holistic approach to transport policy in line with the sustainable development strategy. This will involve developing a sustainable mobility policy to achieve 'shifts to more environmentally friendly modes where appropriate, especially on long distance, in urban areas and on congested corridors. At the same time each transport mode must be optimised. All modes must become more environmentally friendly, safe and energy efficient. Finally, co-modality, i.e. the efficient use of different modes on their own and in combination will result in an optimal and sustainable utilisation of resources. This approach offers the best guarantees to achieve at the same time a high level of both mobility and of environmental protection.'

<sup>(90)</sup> The figures quoted in this paragraph reflect the situation in the EU-27 (except household expenditure, which refers to the EU-25) in 2005 and are based on Eurostat data.

<sup>(91)</sup> The future development of the common transport policy — A global approach to the construction of a Community framework for sustainable mobility, COM(92) 494.

<sup>(92)</sup> Towards fair and efficient pricing in transport — Policy-options for internalising the external costs of transport in the European Union, COM(95) 691.

<sup>(93)</sup> European transport policy for 2010: time to decide, COM(2001) 370.

<sup>(94)</sup> Keep Europe moving — Sustainable mobility for our continent — Mid-term review of the European Commission's 2001 transport White Paper, COM(2006) 314.



## Main changes

Table 3.1: Evaluation of changes in the sustainable transport theme (from 2000)

	EU-27	EU-15
<b>Energy consumption of transport</b>		
<b>Transport growth</b>		
Modal split of freight transport		
Modal split of passenger transport	:	
Volume of freight transport	:	:
Volume of passenger transport	:	
<b>Social and environmental impact of transport</b>		
Greenhouse gas emissions from transport		
Average CO <sub>2</sub> emissions from passenger cars	:	
Emissions of ozone precursors from transport		
Emissions of particulate matter from road transport		
People killed in road accidents		



**LEGEND:**

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available

As GDP has grown, the energy consumption of transport has continued to increase, reflecting increases in traffic. The share of the car in passenger transport and of road in freight transport are still increasing, but slowly, and there are no signs of decoupling from economic growth for either passenger or freight transport. The picture with regard to greenhouse gas emissions is mixed: although emissions were about 25 % higher in 2005 than they were in 1990, the growth rate is slowing, and emissions even fell in the EU-15 between 2004 and 2005. Moreover, emissions of some noxious pollutants, such as particulates and those responsible for summer smog, are continuing to decrease, and the numbers killed in road accidents are also continuing to fall.

Up to now, transport has always been closely linked to economic development: it is expected that when economic activity expands, the volume of freight and the number of passengers transported grow. However, as transport grows, it demands more energy. So far, this demand has not been offset by the significant improvements in engine efficiency and vehicle design over the last 35 years, and between 2000 and 2005, the energy consumption of transport in the EU-27 grew at an average rate of 1.3 % per year. This was only slightly less than the 1.7 % average for GDP over the same period.

In 2005, in the EU-27, road transport accounted for 76.5 % of inland freight transport in terms of tonne-km. This share has steadily increased over the years, albeit at a low rate. Growth in the volume of freight transport remains linked to that of GDP, although a break in the time series does not allow the evaluation of the magnitude of this coupling. The latest figures for passenger transport show that in 2004 cars were used for 84.8 % of inland passenger-km in the EU-15. This share has remained slightly above the 1998 level of 84.5 % for several years, and indicates a degree of stabilisation. There has been no consistent sign of decoupling from GDP growth in recent years.

**The energy demand of transport is growing in line with GDP**

**Road transport and the car still dominate**



**Road fuel prices keep on increasing and the gap between diesel and petrol prices is narrowing**

Over the period 1991 to 2000, the price of petrol rose at an average annual rate of 3.5 %, which was more than twice the rate for diesel. Since 2000, however, the price of diesel has increased at 3.1 % per year on average, compared with 1.5 % for petrol, somewhat narrowing the price gap between these two fuels.

**Greenhouse gas emissions from transport are still growing in the EU-27**

Transport is an important emitter of greenhouse gases, being responsible for a growing share (19.1 % in 2005) of total EU-27 emissions. It is also the only major source sector which is producing more greenhouse gas emissions than in 1990; every other sector having reduced its emissions (see climate change and energy chapter). Transport is therefore a critical sector in achieving the Kyoto target.

Over the period 2000 to 2005, the average growth of greenhouse gas emissions from transport was still of about 1.2 % per year in the EU-27, compared to 0.9 % in the EU-15. However, emissions stabilised in the EU-27 between 2004 and 2005 and even decreased slightly in the EU-15. Growth in greenhouse gas emissions from transport has slowed down below the growth rate of energy consumption. This is almost entirely due to slower growth in CO<sub>2</sub> emissions from road transport as a result of diesel supplanting petrol as the major road transport fuel and the lower average CO<sub>2</sub> emissions emitted per kilometre from new passenger cars. In spite of a continued decrease of the latter since 2000, the rate of change is not sufficient to meet the target of 120 grams per kilometre by 2012.

**Pollutant emissions are decreasing**

In contrast to the continued increase in emissions of greenhouse gases, noxious emissions, such as particulates and those responsible for ozone formation have declined steadily since 1990 due to the progressive tightening of the technical standards required of new vehicles. However, the rate at which these new standards are absorbed into the vehicle fleet is dependent on the lifetime of different vehicle types and it can take many years before the full benefits of new legislation are realised. The introduction of catalytic converters in the early 1990s and subsequent stricter standards for emissions and transport fuels continue to have a beneficial effect in reducing pollutant emissions by road transport in the EU-27, which fell by 4.4 % per year on average between 2000 and 2004 for ozone precursors, and by 4.2 % per year for particulates.

**Our roads are becoming safer, but young adults are particularly at risk**

A large part of the deaths resulting from road traffic accidents could be avoided, and a disproportionate number of young adults die relative to other age groups. In the EU-15, the death rate due to road accidents is about twice as high for 18-24-year-olds as for the population as a whole. Nevertheless, despite the increase in road traffic, there has been a steady reduction in the numbers killed in accidents in both the EU-27 and the EU-15. The EU-15 is well on track to meet the proposed target of halving the number of deaths by 2010, relative to 2000, but the EU-27 lags behind slightly.

### Rationale for the selection of indicators

The indicators selected for this theme reflect the objectives set out in the context of the renewed sustainable development strategy (Box 3.1).

### Box 3.1: Objectives related to sustainable transport in the renewed sustainable development strategy

Overall objective: 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.

Operational objectives and targets:

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

The headline indicator compares the development of the energy consumed by transport with growth in GDP in order to assess the degree of decoupling. The development of the energy consumed by each mode is also discussed in conjunction with this indicator.

The other indicators are divided into three subthemes:

- **Transport growth** completes the headline indicator by looking at the modal split and demand for transport, which are the driving forces behind the impacts of transport on society and the environment. Four indicators monitor trends in the modal split and the link between growth in transport and GDP, for freight and passengers. A further indicator from this section, on energy consumption by mode of transport, is covered in this publication along with the headline indicator. Indicators identified as to be developed to complete this subtheme include 'vehicle-km by road', and 'use of public transport'.
- **Transport prices**, which are an essential policy tool for influencing choice and behaviour, and therefore the pattern of transport and its positive and negative impacts, are unfortunately largely missing from this publication due to the absence of relevant data. The only element included is the trend in road transport fuel prices. Indicators are being developed to monitor the external costs of transport and infrastructure investment.
- **Social and environmental impact of transport** covers emissions of greenhouse gases and the average CO<sub>2</sub> emissions of new passenger cars, emissions of particulates and the ozone precursors responsible for summer smog, along with fatalities from road traffic accidents. Although transport cannot be isolated as a specific cause, the impact of noise and emissions on households is covered in the chapter on public health. It is expected that in the future this subtheme will be bolstered by indicators on transport noise and habitat fragmentation by transport.



### Box 3.2: TERM — EU transport and environment reporting mechanism

One of the guiding principles of the renewed sustainable development strategy is to 'promote integration of economic, social and environmental considerations so that they are coherent and mutually reinforce each other'.

The Amsterdam Treaty identified integration of environmental and sectoral policies as the way forward to sustainable development. Following initial work within the Commission, the joint Transport and Environment Council of June 1998 invited the Commission 'in conjunction with the European Environment Agency ... to develop a comprehensive set of indicators of the sustainability of transport and tools for evaluating external costs, building on useful work already done, and to report on them regularly to the Council'.

Since then the Commission services and the European Environment Agency have jointly developed a framework and set of indicators which have been regularly published. The main aim of TERM is to monitor the progress and effectiveness of transport and environment integration strategies on the basis of a core set of indicators. The TERM indicators were selected and grouped to address seven key questions.

1. Is the environmental performance of the transport sector improving?
2. Are we getting better at managing transport demand and at improving the modal split?
3. Are spatial and transport planning becoming better coordinated so as to match transport demand to the need for access?

4. Are we optimising the use of existing transport infrastructure capacity and moving towards a better-balanced inter-modal transport system?

5. Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are internalised?

6. How rapidly are cleaner technologies being implemented and how efficiently are vehicles being used?

7. How effectively are environmental management and monitoring tools being used to support policy- and decision-making?

The TERM indicator list covers the most important aspects of the transport and environment system (driving forces, pressures, state of the environment, impacts and societal responses — the so-called DPSIR framework). It represents a long-term vision of the indicators that are ideally needed to answer the above questions.

The TERM process is steered jointly by the European Commission (Directorate-General for the Environment, Directorate-General for Energy and Transport, Eurostat) and the EEA. The EEA member countries and other international organisations provide input and are consulted on a regular basis.

Further information may be found at: [http://themes.eea.eu.int/Sectors\\_and\\_activities/transport/indicators](http://themes.eea.eu.int/Sectors_and_activities/transport/indicators).

## Potential linkages of the indicators

### Linkages within sustainable transport

Issues related to transport growth, such as energy consumption by transport, the relative dominance of different transport modes, influence directly the impact of transport, whether environmental (emissions of greenhouse gases and other pollutants) or social (fatalities from road traffic accidents). Transport prices are instruments that influence patterns of transport, and their impacts.

### Linkages with the economic dimension

When economic activity expands, the volume of freight and the number of passengers transported grow and conversely, the demand for mobility, in terms of products and services, drives economic growth. Transport directly supports economic growth by linking producers to raw materials, to labour markets and to consumers. The availability of infrastructure therefore influences the comparative advantage of a region and its ability to specialise, by influencing access to natural, economic and human capital, in turn influencing job creation and wealth. Transport is therefore closely linked to the issues of competitiveness and employment. There is also a link to innovation, particularly in the area of ICT technologies for mobility and intelligent transport systems, which are expected to have considerable impact on safety and the efficient management of traffic flows, as well as in engine efficiencies and vehicle design.

Transport also underpins patterns of production and consumption. The fact that the consumption of material remains relatively constant over the years, whilst freight transport is constantly

growing, implies that production processes are divided into more and more processes separated by larger and larger distances. The cost, efficiency and reliability of transport are all factors which influence these patterns.

The main social function of transport is to provide access to basic services, such as health, education, shopping, tourism, sport and recreation. It also provides the means to get to work. However, different social groups have different needs and when transport is not easily available or affordable it can seriously hamper a person's chances and possibilities in life. Income, age, gender, disability and where people live are all factors which may affect the need for or access to transport. Transport is therefore linked to the issues of social inclusion, access to labour markets, education, ageing society. Transport is also the means for migrants to move from one place to another.

**Linkages with the social dimension**

However transport has major negative effects on the environment. Biodiversity is affected by many aspects of transport. Emissions of pollutants from transport affect air quality and can damage plants and animals in much the same way as they impact on human health. There is also evidence that transport noise can disrupt the normal breeding patterns of some species of birds and amphibians. The construction of new infrastructure not only disfigures the landscape but also breaks natural habitats into smaller fragments which may then be unable to maintain viable populations of some species. Linear transport infrastructure, such as roads, railway lines and canals, may also act as a conduit for invasive non-native species. These species have been transported to the EU from another part of the world, perhaps attached to the hull or in the ballast water of a ship, or in the hold of an aircraft. The presence of airports near to the nesting and feeding areas of birds can result in large numbers of collisions between aircraft and birds, resulting in death for the bird and risking a fatal accident for the aircraft. Accidents involving spillages of hazardous substances, including oil spills by tankers, also cause important localised damage to biodiversity. Runoff from roads following storms and snowfall carries numerous pollutants and harmful substances which have been deposited on the road surface into waterways where they can cause harm to aquatic organisms.

**Linkages with the environment dimension and health**

Traffic accidents and air pollution are also linked to health. And an over-dependence on the car is associated with obesity and heart disease linked to lack of exercise. For drivers, pilots and other staff working in the transport sector there are risks of occupational illnesses.

Given the large and growing consumption of energy by transport, there are strong links to energy-related issues, such as security of supply and renewables, as well as to climate change. Biofuel use by transport can contribute to energy independence, to more sustainable agricultural production patterns and to a more favourable carbon balance. However, their production may also have negative impacts on biodiversity, soil erosion, water use and water quality. Moreover, the carbon balance of certain biofuels can be worsened by deforestation and the use of fertilisers.

**Linkages with climate change and energy**

The external dimension of transport is strongly linked to tourism and trade, with neighbouring countries as well as with the rest of the world. Globalisation is only made possible by efficient transport between trading partners. Development aid is important in this context, as for trade to take place beyond coastal regions a well-developed inland transport infrastructure must be put in place. Intercontinental transport implies large distances and is carried out predominantly by ship and plane. Although transport by ship is very fuel efficient, emissions of oxides of sulphur and particulates are high from this mode, and there have also been numerous oil spillages over recent years causing serious damage to biodiversity along EU coastlines. Aviation has become considerably more fuel-efficient over the last 35 years, however, given

**Linkages with global partnership**



the strong growth resulting from international tourism and the demand for fresh out-of-season produce, greenhouse gas emissions from this mode continue to grow. The radiative forcing due to these emissions at high altitudes is thought to be considerably greater than if they were emitted at ground level. Trade brings many benefits to partner countries, but also brings environmental and social costs, and may result in a long-term deterioration of human and environmental capital if patterns of exploitation are not sustainable. Although biofuel use by transport is generally seen in positive terms, production in developing countries may result in deforestation and conversion of food-producing land.

#### Linkages with good governance

Given the complexity of transport's interactions with the economy, society and the environment, various means of governance are employed in an attempt to balance conflicting needs and demands in the most efficient ways. These include the employment of market-based instruments through differential taxation and other financial instruments, establishing new institutional frameworks, encouraging self-commitment and self-regulation by industry, and stakeholder dialogues. The internal market relies on transport to supply the four freedoms — the free movement of people, goods, services and capital. Transport systems in different countries of the EU have developed over many years within national boundaries and the establishment of an efficient multimodal trans-European transport network with interoperability between different systems and fair competition between modes is a primary concern. Instruments such as taxation and infrastructure charging can be designed to optimise the use of each individual transport mode and the balance between modes, by better reflecting the social and environmental costs of transport products and services in their prices. Road safety is also an issue linked to governance. Some global and regional issues require multilateral and bilateral cooperation and representation of EU interests is therefore needed within international and regional organisations. The development of transport infrastructure in developing countries to support trade relations is supported by targeted aid programmes.

#### Further reading on sustainable transport in Europe

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

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

*Panorama of transport — Edition 2007*, Eurostat statistical books, 2007

*Saving 20 000 lives on our roads — A shared responsibility*, European Commission (2003)

*Transport and environment: on the way to a new common transport policy – TERM 2006: indicators tracking transport and environment in the European Union*, European Environment Agency (2007)

## Energy consumption of transport



**Definition:** This indicator is defined as the **ratio between the energy consumption of transport and GDP** at constant prices. The energy consumed by all types of transport (road, rail, inland navigation and aviation) is covered, including by households and public administrations, with the exception of maritime and pipeline transport. The GDP data are at constant 1995 prices, i.e. they have been adjusted to take account of inflation.

The renewed sustainable development strategy has the objectives of ‘achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions’ and ‘decoupling economic growth and the demand for transport with the aim of reducing environmental impacts’. The mid-term review of the Commission’s 2001 transport White Paper <sup>(95)</sup> also stresses that ‘transport policy must contribute to achieving the objectives of European energy policy as laid down in the conclusions of the European Council of March 2006, in particular as regards security of supply and sustainability’.

### Indicator relevance

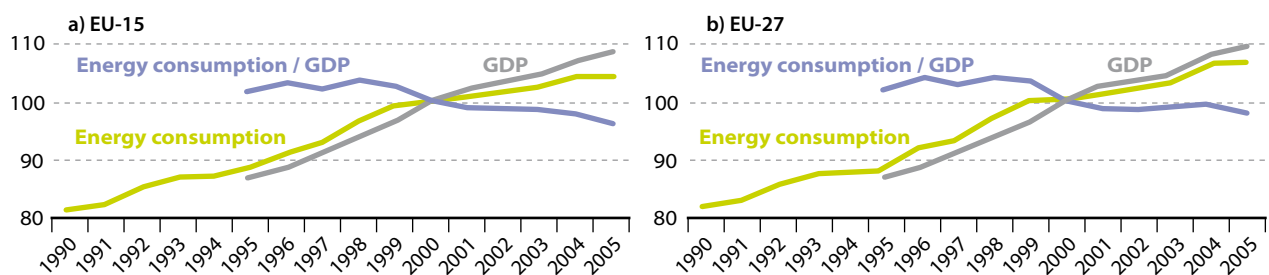
<sup>(95)</sup> Keep Europe moving  
– Sustainable mobility for  
our continent, op. cit.

Transport demand and energy consumption are closely linked. More transport, whether measured in terms of passengers or tonnes of freight carried over a specific distance, or in terms of vehicle movements, generally consumes more energy. The specific energy consumption depends on which means of transport is being used and the particularities of the vehicle and journey in question. The indicator would be responsive to shifts from road and aviation to rail and inland navigation, and from car to bus and rail. Energy consumption is therefore also a plausible proxy for transport demand.

Transport demand is closely linked to economic growth. Strong economic growth provides more spending power, which may be spent on goods and travel. Economic growth also demands more industrial production. And this all adds up to more transport. However not all economic growth is equally dependent on transport growth. Growth in service industries for example requires little additional industrial production. There are also behavioural and lifestyle trends, such as car-sharing, video-conferencing and tele-working, which may weaken the link. And in terms of traffic volumes, some means of transport, such as train and water transport are more efficient than others.

Given that existing transport patterns are associated with negative side-effects, it would be desirable to achieve strong economic growth with weaker growth in transport and with enhanced innovation creating more environmentally friendly, safe and energy-efficient transport solutions. This is the background to the renewed sustainable development strategy’s objective of ‘decoupling economic growth and the demand for transport with the aim of reducing environmental impacts’.

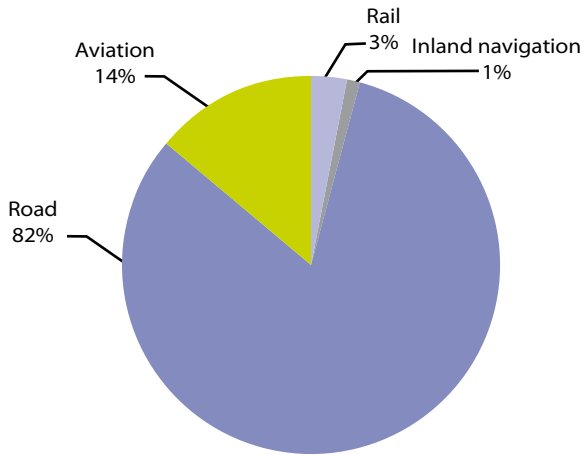
Figure 3.1: Ratio of energy consumption of transport to GDP in (a) EU-15 and (b) EU-27 (index 2000=100)



Source: Eurostat.

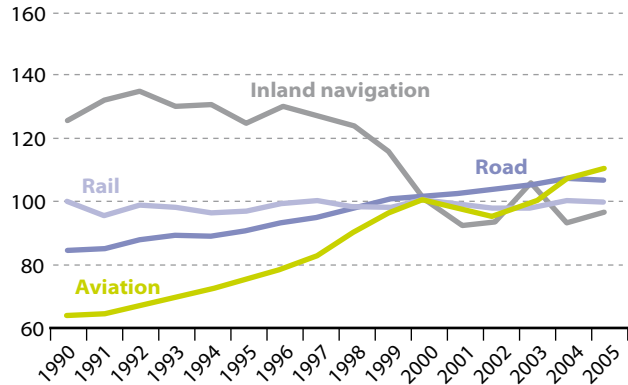


**Figure 3.2: EU-27 energy consumption by transport mode, percentage split, 2005 (%)**



Source: Eurostat.

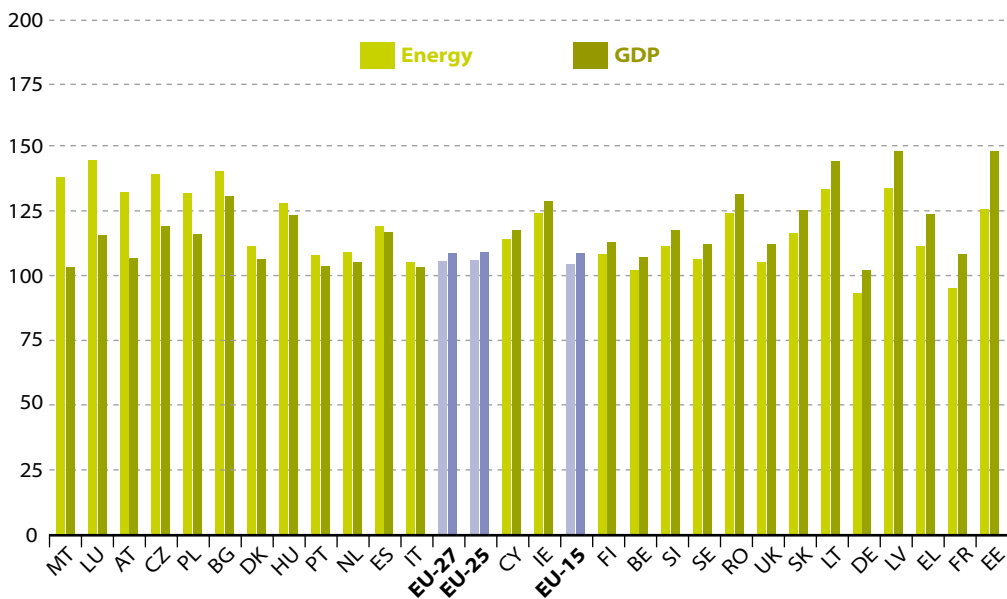
**Figure 3.3: EU-27 energy consumption by transport mode (index 2000=100)**



**Figure 3.4: Energy consumption of transport and GDP in 2005 by country (index 2000=100)**

NB: The order of Member States from left to right is based on the ratio between growth in energy consumption and growth in GDP, reflecting the degree of decoupling between these two variables.

Source: Eurostat.



**Analysis**

Between 1995 and 1999, transport energy consumption grew at a somewhat higher rate than GDP, the difference being more marked for the EU-27 than for the EU-15, indicating stronger growth in transport energy demand in the 12 last countries to have joined the Union. However, in the year 2000, growth in energy consumption reduced dramatically, whilst GDP growth remained strong. Since 2000, the growth in both has slowed down, but, even if the growth in the energy consumption of transport is weaker (1.3 % average annual increase between 2000 and 2005, compared to 1.7 % for GDP in the EU-27), it is insufficient to demonstrate decoupling. At an average of 0.7 % per year over the same period, the energy consumption of transport has been slower in the EU-15 than in the EU-27 and this is reflected in the ratio between energy consumption and GDP.



Comparing the different modes, road, with 82 % of the total in 2005, very clearly dominates. The energy consumption of this mode grew at an average annual rate of 1.8 % between 1990 and 2000, and continues to increase steadily, albeit at the reduced average rate of 1.3 % per year. Aviation, although only responsible for about 14 % of transport's energy consumption in 2005, is the fastest growing energy consumer, growing at the average rate of 4.6 % per year between 1990 and 2000. After the dramatic slowdown following the terrorist attack on the World Trade Center in New York in 2001, growth has picked up again and shown an increase of 4.5 % per year on average since 2002. Rail and inland navigation, as well as having smaller market shares of transport energy consumption, are both decreasing in absolute terms. The downward trend in the energy consumption of inland navigation, which began in the mid-1990s, seems to have bottomed out and even experienced a brief upturn in 2003. Between 1990 and 2000 rail showed only 0.1 % average annual growth in energy consumption, but since 2000 it has fallen at an average rate of 0.3 % per year.

Regarding the energy consumption of transport and GDP in 2005 relative to the position in 2000, it is evident that decoupling is occurring in some countries where growth in GDP stands well above that of energy consumption. These are notably Estonia and France, but also Greece, Latvia, Germany and Lithuania. More modest signs are seen in Slovakia, the UK, Romania, Sweden and Slovenia. At the other end of the scale, the Czech Republic, Austria and Luxembourg share some common features linked to their very high growth in the energy consumption of transport relative to GDP. All three are important transit countries, landlocked, and with substantially lower diesel prices than some of their neighbours. In the case of Malta there has been strong growth in the energy consumption of transport, particularly road diesel, accompanied by only modest growth in GDP. On the other hand Bulgaria has experienced strong GDP growth as well as strong growth in the energy consumption of transport (especially aviation and road diesel).



## Transport growth

## Modal split of freight transport

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

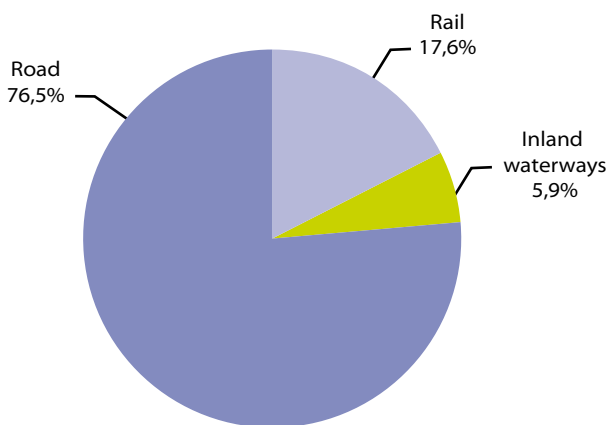


### Indicator relevance

This indicator monitors the objective of the 2006 renewed sustainable development strategy of 'achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system'. The strategy further describes that measures should be taken, where appropriate 'to effect a shift from road to rail, water and public passenger transport including lower transport intensity through production and logistic process reengineering and behavioural change combined with a better connection of the different transport modes'. This echoes the 2006 mid-term review of the White Paper which also calls for 'shifts to more environmentally friendly modes where appropriate, especially on long distance, in urban areas and on congested corridors'.

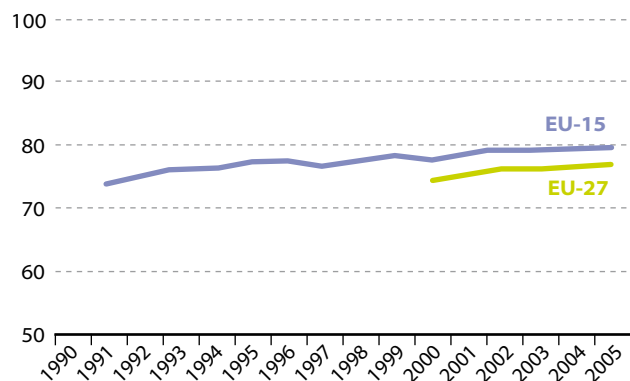
In its 2001 communication to the Gothenburg Council, the Commission had proposed to 'bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998'.

**Figure 3.5: EU-27 modal split of inland freight transport, 2005** (% in total inland tonne-km)



Source: Eurostat.

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



### Analysis

The EU-27 share of road in total inland freight transport stood at 76.5 % in 2005, having increased its share by an average of 0.7 percentage points per year since 2000. This is rather higher than the 0.4 percentage points per year shown in the EU-15 over the same period, reflecting the shift towards road in many of the 12 most recent Member States. In 2005, rail represented 17.6 %, and inland waterways 5.9 % of inland freight transport.

## Modal split of passenger transport



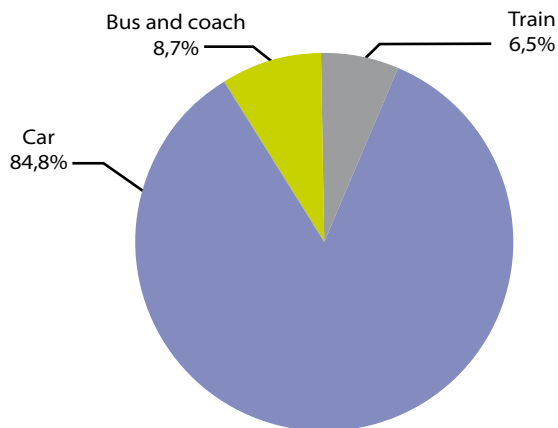
**Definition:** This indicator is defined as the percentage **share of each mode of transport in total inland transport**, expressed in passenger-kilometres (pkm). It is based on transport by **passenger cars, buses and coaches, and trains**. All data should be based on movements on national territory, regardless of the nationality of the vehicle. However, data collection methodology is not harmonised at the EU level.

This indicator monitors the objective of the 2006 renewed sustainable development strategy of ‘achieving a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system’. The strategy further describes that measures should be taken, where appropriate ‘to effect a shift from road to rail, water and public passenger transport including lower transport intensity through production and logistic process reengineering and behavioural change combined with a better connection of the different transport modes’. This echoes the 2006 mid-term review of the White Paper which also calls for ‘shifts to more environmentally friendly modes where appropriate, especially on long distance, in urban areas and on congested corridors’.

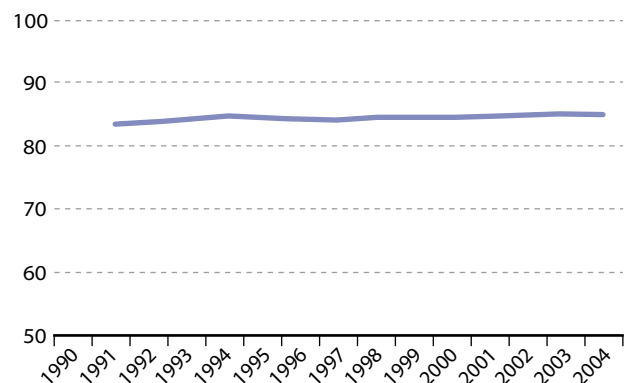
In its 2001 communication to the Gothenburg Council, the Commission had proposed to ‘bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998’.

### Indicator relevance

**Figure 3.7: EU-15 modal split of inland passenger transport, 2004 (% in total inland passenger-km)**



**Figure 3.8: EU-15 car share of inland passenger transport (% of passenger-km)**



Source: Eurostat.

The share of passenger-kilometres by car in total inland passenger transport has continued to grow slowly in the EU-15. Despite year-to-year fluctuations, the average growth in the share of the car by 0.1 percentage points per year since 2000 does not differ from the average over the period 1991 to 2000. In 2004, the car share of passenger transport stood at 84.8 %, close to the 1998 level which served as a reference level in the 2001 sustainable development strategy. The share of passenger transport by train represented 6.5 % in 2004, while transport by bus and coaches represented 8.7 %.

### Analysis



## Transport growth



## Volume of freight transport

**Definition:** This indicator is defined as the **ratio between the volume of inland freight transport** measured in tonne-kilometres **and GDP** at constant prices. 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.



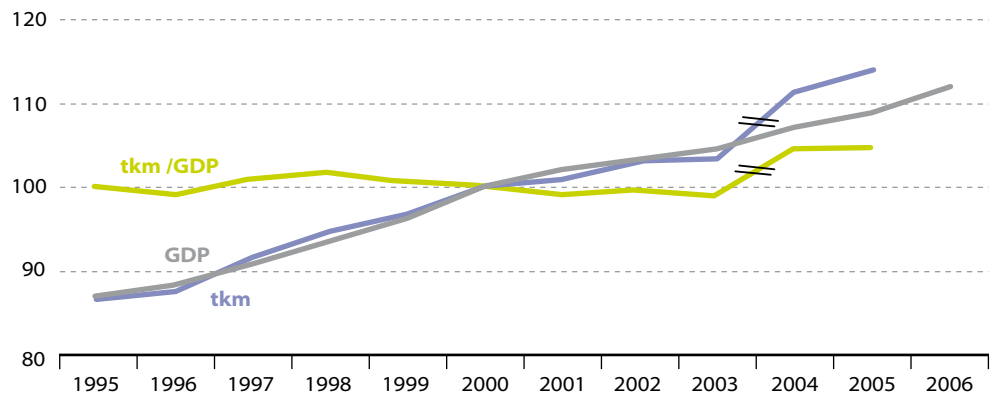
## Indicator relevance

An operational objective of the renewed EU sustainable development strategy is 'decoupling economic growth and the demand for transport with the aim of reducing environmental impacts'.

**Figure 3.9: EU-25 volume of inland freight transport (in tonne-km) and GDP (in constant 1995 EUR) (index 2000=100)**

NB: Break in series between 2003 and 2004. This indicator currently excludes maritime transport.

Source: Eurostat.



## Analysis

Both freight transport and GDP grew at an annual average rate of 2.9 % over the period from 1995 to 2000.

Due to changes in methodology in 2004, the total number of tonne-kilometres for 2004 and 2005 are not fully comparable with the previous years. This obviously also has an effect of the tkm/GDP ratio for these years. However, it is possible to compare the volume of freight transport to GDP on either side of the break. Over the period 2000 to 2003 transport growth slowed to an average rate of 1.1 % per year, compared to 1.5 % for GDP. Freight transport growth in 2005 relative to 2004 was slightly higher than that of GDP: 2.3 % compared with 1.7 %. It is therefore apparent that no decoupling has taken place.

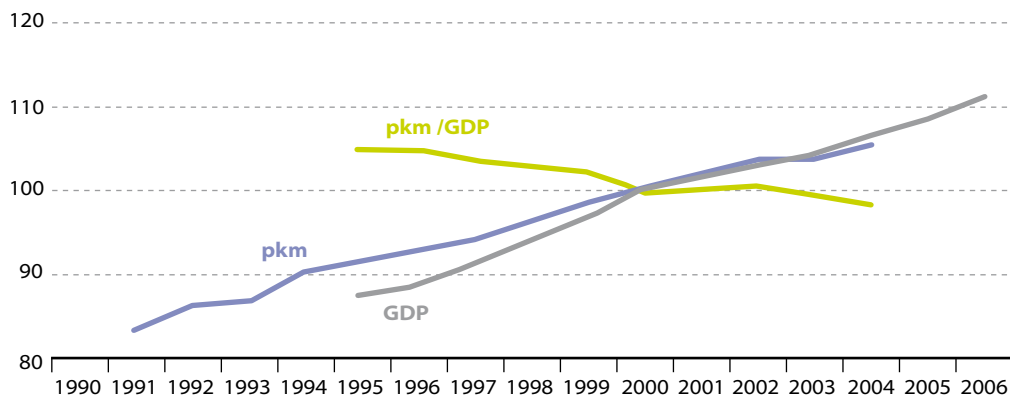
## Volume of passenger transport



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

An operational objective of the renewed EU sustainable development strategy is ‘decoupling economic growth and the demand for transport with the aim of reducing environmental impacts’.

### Indicator relevance



**Figure 3.10: EU-15 volume of inland passenger transport (in passenger-km) and GDP (in constant 1995 EUR) (index 2000=100)**

*NB:* This indicator currently excludes air transport.

Source: Eurostat.

The EU-15 GDP grew at an annual average rate of 2.8 % over the period from 1995 to 2000, compared to 1.9 % for passenger transport, demonstrating a tendency towards decoupling. However, the growth of both slowed over the period 2000 to 2004 to 1.6 % per year on average for GDP and 1.2 % for passenger transport, showing that the volume of passenger transport is still fairly closely coupled to the growth in GDP in more recent years.

### Analysis



## Transport prices



## Road fuel prices

**Definition:** This indicator is defined as the **average retail price** of each of the two main transport fuels, unleaded petrol (95 RON) and automotive diesel, in EUR per litre, inclusive of all taxes. The data are expressed in constant prices in order to exclude the effects of inflation.



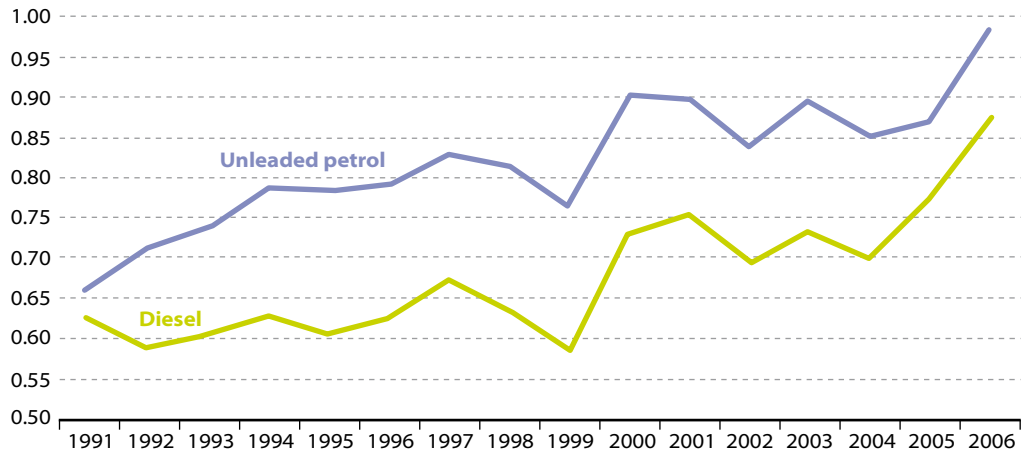
## Indicator relevance

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. Road traffic is a major source of carbon dioxide, and these emissions are directly proportional to the quantity of a fuel consumed. A major part of the retail price of road fuels comprises excise duty and value added tax. In general the value-added tax on diesel and petrol is identical in any particular Member State, and ranges between 12 and 25 %. There is a much wider variation in excise duties, both between Member States and between fuels, petrol in general bearing much higher duty than diesel, the exception being the UK, where higher duty is imposed on diesel. Higher fuel prices are expected to restrain demand in the long term, for example through encouraging more economic driving patterns and the purchase of more fuel-efficient vehicles. Short-term reactions to higher fuel prices could also include a shift from car to public transport or a greater uptake of car-sharing. Excessive differences in fuel tax levels between Member States also result in a distortion of competition, as pointed out in the mid-term review<sup>(96)</sup> of the 2001 transport White Paper.

<sup>(96)</sup> Keep Europe moving  
– Sustainable mobility for  
our continent, op. cit.

**Figure 3.11: EU-15 average retail price of road transport fuels (EUR per litre — constant 1995 prices)**

Source: Eurostat.



## Analysis

Over the period 1991 to 2000, the price of petrol rose at an average annual rate of 3.5 %, which was more than twice the rate for diesel. Since 2000, however, the price of diesel has increased at 3.1 % per year on average, compared with 1.5 % for petrol, somewhat narrowing the price gap between these two fuels.

Despite the relatively high rates at which road fuel prices have increased over recent years, both the consumption of road fuels and emissions of CO<sub>2</sub> from road transport have continued to grow (see indicators on energy consumption by mode and on emissions of CO<sub>2</sub>). However, some of the expected consequences of higher fuel prices, such as the purchase of more fuel-efficient vehicles or the introduction of less car-dependent land use development can only be expected to be seen in the medium to long term.

## Greenhouse gas emissions from transport



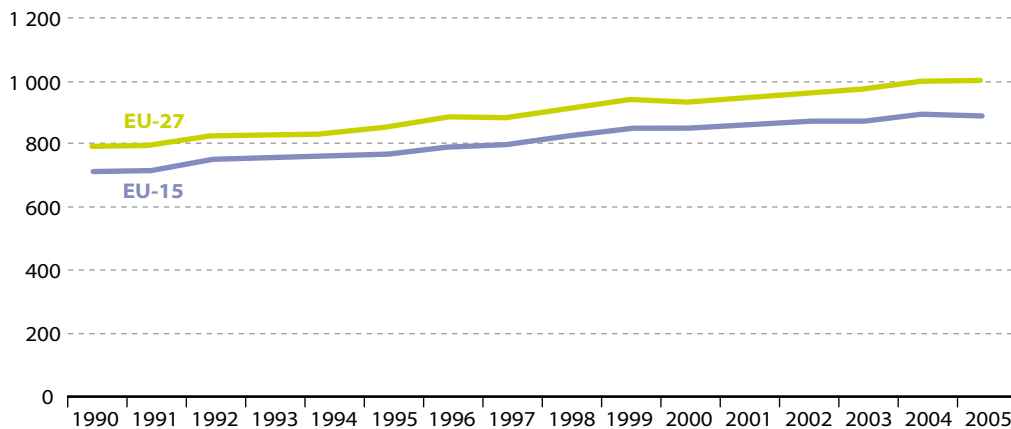
**Definition:** This indicator shows trends in the **emissions from transport** (road, rail, inland navigation and domestic aviation) **of the greenhouse gases regulated by the Kyoto Protocol**. Only three gases are relevant in the context of transport (carbon dioxide, methane, and nitrous oxide) and these have been aggregated according to their relative global warming potentials.

The European Community is a signatory to both the United Nations Framework Convention on Climate Change and the Kyoto Protocol thereto. The EU as a whole is therefore committed to a reduction of its greenhouse gas emissions of 8 %, compared with the base year, by 2008-2012.

An objective of the strategy is to reduce greenhouse gas emissions from transport. Transport is of importance for several reasons. Firstly, it is a significant emitter of greenhouse gases, being responsible for a growing share (19.1 % in 2005, compared with 14.0 % in 1990) of total EU-27 emissions. Secondly it is the only major source sector which is producing more greenhouse gas emissions than in 1990; every other sector has reduced its emissions (see greenhouse gas emissions by sector). Transport is therefore a critical sector in achieving the Kyoto target.

A major part of greenhouse gas emissions from transport is carbon dioxide emissions, which are influenced by a number of factors, including the modal split of transport, but also use of lower-carbon fuels, engine efficiency, friction, driver behaviour, and traffic flows.

### Indicator relevance



**Figure 3.12:** Greenhouse gas emissions from transport (million tonnes of CO<sub>2</sub> equivalent)

Source: European Environment Agency, Eurostat.

Growth in greenhouse gas emissions from transport has slowed down below the growth rate of energy consumption (see headline indicator). During the 1990s the average growth rate for the EU-15 stood at about 1.8 % per year, compared with the somewhat slower growth in the EU-27 at 1.6 % per year. Since 2000, growth in the EU-15 (at about 0.9 % per year on average) has fallen below that of growth in the EU-27 (1.2 %). Although it is too soon to draw any conclusions about the long-term trend, 2005 was a remarkable year in that growth in the EU-15 actually fell by 0.4 % relative to the previous year, and EU-27 emissions only grew by 0.1 %.

### Analysis



Of these emissions 93 % are produced by road transport and the slower growth rate in this indicator has been largely driven by the supplanting of petrol by diesel as the major road transport fuel. Although new passenger cars have become more energy efficient, either through a shift in favour of diesels or through improvements in engine design, the continuing growth of the vehicle fleet and the use of onboard ancillary equipment such as air-conditioning continue to exert an upward pressure on these emissions.



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



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

Although EU emissions of greenhouse gases from transport flattened out in 2005, the growth over the previous 15 years cancelled out a large part of the emission reductions made by other sectors. Whilst total EU-27 emissions of greenhouse gases decreased by 7.9 % between 1990 and 2005, those of transport increased by 26 %, this growth being largely driven by road transport<sup>(97)</sup>. In 2005 EU-15 greenhouse gas emissions from road transport represented 93 % of the emissions from transport, and 18 % of total emissions. According to a Commission communication of February 2007<sup>(98)</sup>, passenger cars alone account for about 12 %.

As proposed by the European Commission in 1995, voluntary agreements were reached with the European car industry in 1999<sup>(99)</sup>, and with the Japanese<sup>(100)</sup> and Korean<sup>(101)</sup> car industries a year later, to reduce the average CO<sub>2</sub> emissions from new cars to 120 grams per kilometre by 2012, with intermediary targets of 140 g/km by 2008 or 2009. The 2006 renewed sustainable development strategy reconfirmed that ‘in line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140 g/km (2008/09) and 120 g/km (2012)’. To reach this objective by 2012, the Commission outlined in its February 2007 communication an integrated approach including mandatory reductions of the emissions of CO<sub>2</sub> to reach the objective of 130 g/km for the average new car fleet by means of improvements in vehicle motor technology, and a further reduction of 10 g/km of CO<sub>2</sub>, or equivalent if technically necessary, by other technological improvements and by an increased use of biofuels<sup>(102)</sup>.

### Indicator relevance

<sup>(97)</sup> These figures are based on data provided by the European Environment Agency and are also available on the Eurostat website.

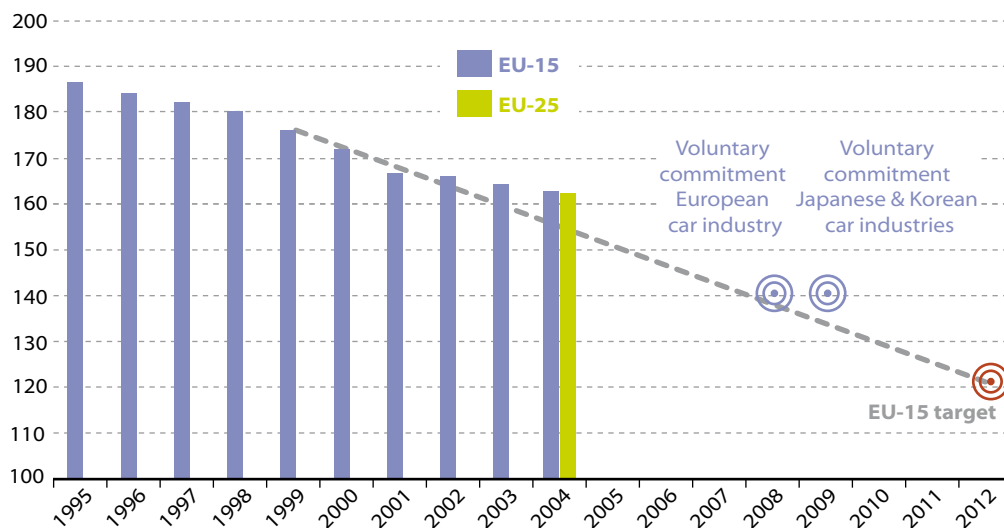
<sup>(98)</sup> Results of the review of the Community strategy to reduce CO<sub>2</sub> emissions from passenger cars and light-commercial vehicles, COM(2007) 19.

<sup>(99)</sup> Commission recommendation of 5 February 1999 on the reduction of CO<sub>2</sub> emissions from passenger cars.

<sup>(100)</sup> Commission recommendation of 13 April 2000 on the reduction of CO<sub>2</sub> emissions from passenger cars (JAMA).

<sup>(101)</sup> Commission recommendation of 13 April 2000 on the reduction of CO<sub>2</sub> emissions from passenger cars (KAMA).

<sup>(102)</sup> COM(2007) 19, op cit.



**Figure 3.13:** Average CO<sub>2</sub> emissions from new passenger cars (grams of CO<sub>2</sub> per kilometre)

Source: European Commission, Directorate-General for the Environment.



### Analysis

Steady progress has been made in reducing the average CO<sub>2</sub> emissions per km of new cars which have fallen from 186 grams in 1995 (EU-15) to 163 grams in 2004, representing an overall reduction of 12.4 %. Between 1995 and 2000, the average specific CO<sub>2</sub> emissions of new cars fell by an average 1.6 % per year. However; this rate slowed down between 2000 and 2004 to an average of 1.3 % per year, falling behind the linear target path.

## Emissions of ozone precursors from transport

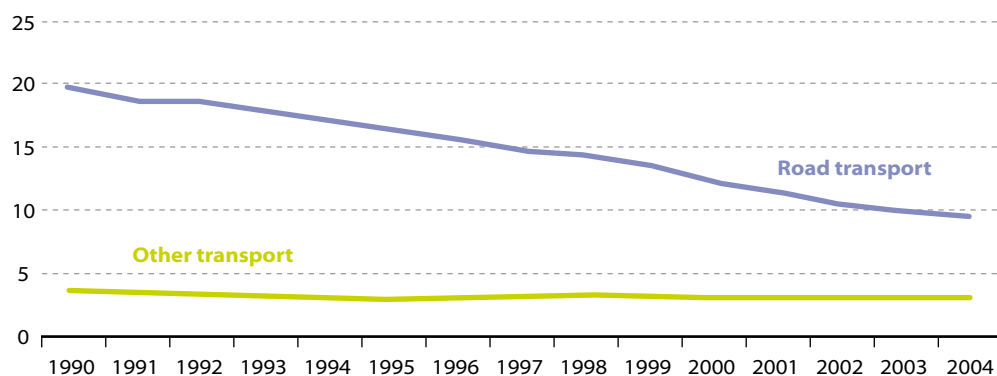


**Definition:** This indicator is defined as the **aggregated ozone-forming potential of emissions of nitrogen oxides, volatile organic compounds, carbon monoxide and methane from transport.**

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

The precursors are principally volatile organic compounds, oxides of nitrogen, carbon monoxide and methane. With the exception of methane, these precursors are all produced in significant quantities by uncontrolled internal combustion engines.

One of the fundamental principles of the 1979 UNECE Convention on Long-range Transboundary Air Pollution is 'to protect man and his environment against air pollution and shall endeavour to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution'. A number of protocols to the Convention impose reduction targets on particular pollutants, but none of these impose targets specifically for transport.



### Indicator relevance

**Figure 3.14: EU-27 emissions of ozone precursors from transport (million tonnes tropospheric ozone-forming potential)**

Source: European Environment Agency.

Emissions of ozone precursors from transport as a whole have fallen steadily since 1990 due to the introduction of emission control measures for road vehicles, principally catalytic converters for cars but also including other measures, such as improvements in fuel quality. The average annual rate of reduction was 4.2 % for the EU-27 (and EU-15) over the period 1990 to 2000 and 4.4 % between 2000 and 2004 (5.5 % for the EU-15).

### Analysis



<sup>(103)</sup> Regulation (EC) No 715/2007 of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information.

<sup>(104)</sup> Directive 98/70/EC relating to the quality of petrol and diesel fuels EU specifications for petrol, diesel and gasoil used in road vehicles, inland waterway barges and non-road mobile machinery such as locomotives, earth moving machinery and tractors.

Over the period 1990 to 2000 emissions from ozone precursors from road transport fell at an average rate of about 4.7 % per year in the EU-27, and at a similar rate in the EU-15. The continuing downward trend is a result of a progressively stronger regime of emission control, combined with the gradual penetration over a dozen or more years of any new technology introduced. Since 2000, the rate of reduction in the EU-27 has increased to 5.9 % on average per year, somewhat lower than the rate in the EU-15 (6.7 %). Positive trends are expected to continue for road transport over the coming decade with the introduction of new Euro 5 emission standards from 2009 and Euro 6 from 2014 for both light and heavy road vehicles <sup>(103)</sup> as well as new specifications for road transport fuels <sup>(104)</sup>.

The other transport modes are responsible for far lower levels of ozone precursors, although as emissions from road transport fall the other modes are becoming relatively more important. Between 1990 and 2004, the levels of these emissions have fallen modestly by 0.8 % per year on average in both the EU-27 and the EU-15.

## Particulate matter from transport



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

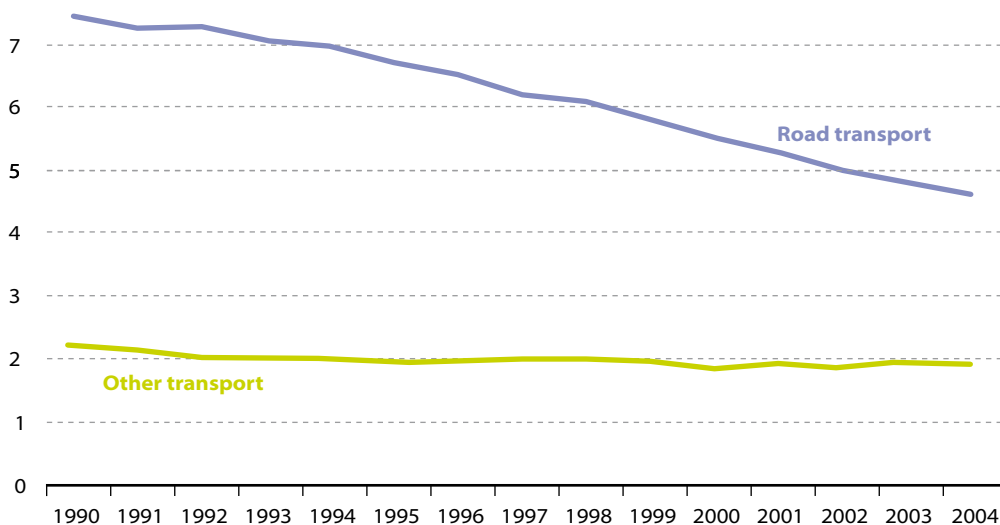
Transport, especially road transport, is one of the main sources of particulate matter. Airborne particulates are thought to contribute to a large number of premature deaths from lung and cardiovascular disease (see indicator on ‘population exposure to air pollution by particulate matter’ in the chapter on public health). They also influence climate change by scattering and absorbing solar energy and affecting cloud formation and the radiative forcing of clouds, and thus exert a cooling effect on the atmosphere. The indicator is therefore relevant to the strategy’s objective of ‘reducing pollutant emissions from transport to levels that minimise effects on human health and/or environment’.

In January 2007, the Commission proposed a revision of the 1998 fuel directive <sup>(105)</sup> which set EU transport fuel quality standards, to reflect developments in fuel and engine technology, the growing importance of biofuels and the need to meet the air quality goals set out in the thematic strategy on air pollution. As diesel is most likely to remain the dominant fuel used in transport, it is of special interest. From 1 January 2009 all diesel marketed in the EU should have an ultra-low sulphur content of no more than 10 parts per million, which is expected to lead to further reductions in both primary and secondary particulates. Complementing this measure, future emission standards for diesel cars (i.e. Euro 5 and Euro 6 standards, which will take effect in 2009 and 2014 respectively <sup>(106)</sup>) will only be met with a particulate filter (introduced by Euro 4 with a limit of 25 mg/km, to be replaced in Euro 5 with a limit of 5 mg/km). Whereas gasoline vehicles are currently exempt from particulate emission standards, Euro 5 introduces a particulate standard for lean-burning (direct injection) gasoline cars (5 mg/km).

### Indicator relevance

<sup>(105)</sup> Directive 98/70/EC relating to the quality of petrol and diesel fuels, EU specifications for petrol, diesel and gasoil used in road vehicles, inland waterway barges and non-road mobile machinery such as locomotives, earth moving machinery and tractors.

<sup>(106)</sup> Regulation (EC) No 715/2007 of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information.



**Figure 3.15:** EU 27 emissions of primary particles and secondary particulate precursors from transport (million tonnes particulate-forming potential)

Source: European Environment Agency.



**Analysis** EU-27 particulates from road transport decreased steadily over the period 1990 to 2000 at the average rate of 3 % per year, whereas particulates from other transport modes fell at the slower rate of 1.8 % per year. Since 2000, whilst the annual average rate of decrease for road transport has even strengthened to 4.2 %, there has been an increase in particulates from other means of transport of about 1 % per year.

The gradual decrease of particulate emissions by road transport can be attributed to a number of factors: the effects of the EU-wide emission standards for cars and lorries, the greater use of low-sulphur road fuels and, especially in more recent years, the gradual introduction of diesel oxidation catalysts and diesel particulate filters.

## People killed in road accidents



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

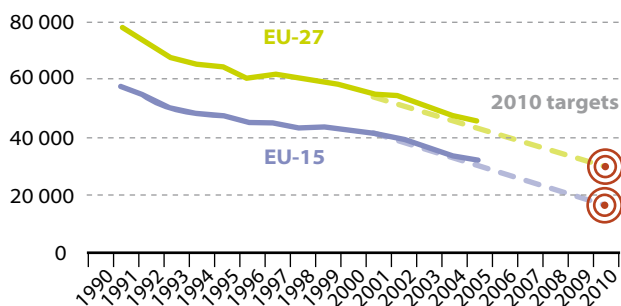
Despite the halving of fatalities in road traffic accidents between 1970 and the early 2000s, road safety is still an issue of major concern with some 41 400 fatalities in the EU-25 during 2005. Most of these fatalities could be avoided and for these reasons the Commission, in its 2001 White Paper, proposed a target of reducing the number of victims by half by 2010, relative to 2000. This target has been taken up in the renewed sustainable development strategy. The Commission adopted a road safety action programme <sup>(107)</sup> which describes the measures considered necessary to meet this target.

Road traffic accidents are the major cause of death for young adults. Those in their 20s are almost twice as likely to be killed in a road accident as older people or the population as a whole.

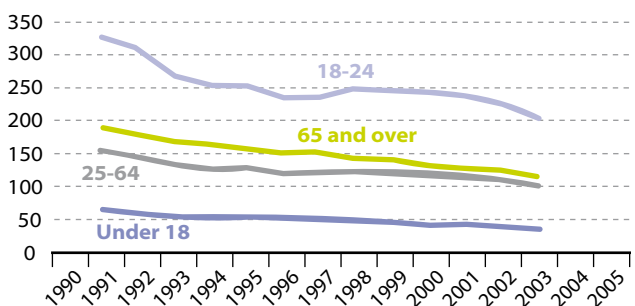
### Indicator relevance

<sup>(107)</sup> Saving 20 000 lives on our roads – A shared responsibility, European Commission (2003).

**Figure 3.16: People killed in road accidents (number of fatalities)**



**Figure 3.17: EU-15 people killed in road accidents by age group, minus Germany and Luxembourg (fatalities per million inhabitants)**



NB: The target of halving road traffic deaths by 2010 originally referred to the EU-15; here it has also been applied to the EU-27.

Source: European Commission, CARE (Community database on road accidents).

Fatalities from road traffic accidents fell in both the EU-27 and the EU-15 at an average rate of about -3.4 % per year between 1991 and 2000. Since 2000 the annual rate of decrease has risen to -4.3 % in the EU-27 and -5.4 % in the EU-15. Although the EU-15 is well ahead of the linear target path, progress in the EU-27 lags behind slightly.

### Analysis

For the EU-15 (minus Germany and Luxembourg) the proportion of those aged between 18 and 24 years old who die as a result of a road accident remains at more than twice that of the population as a whole. The over-65s are also at greater risk than the general population. On the other hand the under-18s are at a relatively low risk of dying through a road accident.



## Methodological notes

### Energy consumption of transport

The statistics presented here are derived from Eurostat's energy balance sheets. The balance sheets are based on energy supplied within the national territory and include all flows (production, foreign trade, stocks, transformation inputs and outputs, consumption, etc.). Within these sheets 'final energy consumption' represents the energy delivered to the final user.

It should be noted that maritime and pipeline transport are not included in the balance sheet concept of final energy consumption. In the case of maritime transport, marine bunkers are considered as exports in the balance sheets. The argument for this is that refuelling of ocean-going ships is not directly related to the economic activity of the reporting country. 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 passenger transport, and volume of passenger transport

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

Data on passenger transport performance are collected through the Eurostat/ECMT/UNECE common questionnaire on transport statistics, and from 2003, rail transport data are also collected pursuant to Regulation (EC) No 91/2003 on rail transport statistics. The common questionnaire is accompanied by a glossary for transport statistics.

Where data have been unobtainable from these sources, figures have been taken, where possible, from national statistical institutes, European Conference of Ministers of Transport, United Nations Economic Commission for Europe, International Railways Union, Directorate-General for Energy and Transport or estimated by Eurostat.

### Modal split of freight transport, and volume of freight transport

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.

Data on goods transport performance are collected through the following legal acts.

- Road: Council Regulation (EC) No 1172/98 on statistical returns in respect of the carriage of goods by road (data prior to 1999 were collected in the frame of Council Directive 78/546/EEC on statistical returns in respect of carriage of goods by road as part of regional statistics);
- Rail: Regulation (EC) No 91/2003 on rail transport statistics (data prior to 2003 were collected in the frame of Council Directive 80/1177/EEC on statistical returns in respect of carriage of goods by rail, as part of regional statistics);

- Inland waterways: Council Directive 80/1119/EEC on statistical returns in respect of carriage of goods by inland waterways.

As with passenger transport, above, where data have been unobtainable from these sources, figures have been taken, where possible, from national statistical institutes, European Conference of Ministers of Transport, United Nations Economic Commission for Europe, International Railways Union, Directorate-General for Energy and Transport or estimated by Eurostat.

GDP data are compiled in accordance with the European system of accounts (ESA 1995) adopted in the form of Council Regulation (EC) No 2223/96 of 25 June 1996, and originally published in Official Journal L 310 of 30 November 1996.

### Road fuel prices

The collection of the basic data is based on Council Decision 1999/280/EC, and Commission Decision 1999/566/EC. They are published by the Commission at [http://ec.europa.eu/energy/oil/bulletin/index\\_en.htm](http://ec.europa.eu/energy/oil/bulletin/index_en.htm). Prices are deflated by Eurostat.

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

Emissions data are compiled by the European Topic Centre on Air and Climate Change on behalf of the European Environment Agency. They are based on national submissions to the Convention on Long-range Transboundary Air Pollution (CLRTAP) for ozone precursors (excluding methane) and particulate matter, or the United Nations Framework Convention on Climate Change and the EU greenhouse gas monitoring mechanism for greenhouse gas.

The different greenhouse gases have been aggregated by Eurostat on the basis of each gas' global warming potential, using the following coefficients: carbon dioxide (CO<sub>2</sub>), 1; methane, 21; and nitrous oxide, 310. The results are expressed in terms of CO<sub>2</sub> equivalents.

Aggregated emissions of ozone precursors are calculated on the basis of each substance's typical tropospheric ozone-forming potential, using the following coefficients: oxides of nitrogen, 1.22; non-methane volatile organic compounds (NMVOC), 1; carbon monoxide, 0.11; methane, 0.014. The results are expressed in NMVOC equivalents (1 000 tonnes). It should be noted that the term 'NMVOC' comprises a large and diverse group of chemical compounds, displaying a wide range of physical and chemical characteristics, and therefore this aggregation represents a rather simplified approach to very complex processes of chemical interaction.

The total particulate-forming potential is calculated as the sum of primary (direct emissions) and secondary (formation by reactions in the atmosphere) aerosols. The emissions are aggregated into PM10 equivalents using the following weighting factors: PM10=1, sulphur oxides=0.54, nitrogen oxides=0.88, ammonia=0.64.





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

Data for the year 2002 onwards are collected by the Commission pursuant to an EU monitoring scheme <sup>(108)</sup>. For earlier years, data supplied by the automobile constructors' associations are used. Minor discrepancies exist between the two series and efforts have made to identify the reasons

and improve data quality. Overall, EU-15 official data are considered satisfactory by the three associations, and the gap with the data provided by the industry is very limited. Work on data quality with Member States will be pursued, so as to further increase their accuracy and representativity of the EU-15 and EU-25 situation.

### Box 3.3: CARE — Community road accident database

CARE is a Community database on road accidents resulting in death or injury. The purpose of CARE is to provide a powerful tool which would make it possible to identify and quantify road safety problems throughout the European roads, evaluate the efficiency of road safety measures, determine the relevance of Community actions and facilitate the exchange of experience in this field.

Since 1984 a large number of measures to reduce road accidents have been taken at the Community level. Along with these measures, the Council decided on 30 November 1993 to create a Community database on road accidents (Council Decision 93/704/EC, OJ L 329, 30.12.1993, pp. 63-65). It was commonly agreed that such a database at the Community level would make it possible to identify and quantify road safety problems, evaluate the efficiency of road safety measures, determine the relevance of Community actions and facilitate the exchange of experience in this field.

Instead of entering into a lengthy process of defining and adopting a new standardised structure and recognising that this would require considerable changes for the national administrations (such as the harmonisation of accident reports, definitions and collection methodologies) it has been decided that the national data sets should be integrated into the CARE database in their original national structure and definitions, with confidential data blanked out. Subsequently, the Commission provided a framework of transformation rules so that CARE provides compatible data. The process of improving 'homogenisation' of accident data within CARE and the process of developing it are under way.

Further information about CARE can be found at:

[http://ec.europa.eu/transport/roadsafety/road\\_safety\\_observatory/care\\_en.htm](http://ec.europa.eu/transport/roadsafety/road_safety_observatory/care_en.htm)

<http://www.erso.eu>

### People killed in road accidents

CARE (see Box 3.3 above) data were used, with the exception of the 2002 age breakdown for Belgium which was taken from the website of the Federal Public Service for Economy, SMEs, self-employed and energy ([http://statbel.fgov.be/figures/d364\\_fr.asp](http://statbel.fgov.be/figures/d364_fr.asp)).

The split by age covers the EU-15 countries with the exception of Germany (no data provided to CARE) and

Luxembourg (data only provided up to 2002). Germany is very close to the EU-15 average fatality rate. However, since no age distribution data were available for Germany it is impossible to know how far the exclusion of these data may affect the EU aggregate. In the case of Luxembourg, despite its higher than average fatality rate, the small population size means that non-inclusion has little impact on the EU-15 aggregate (of the order of 0.2 to 0.3 %).

<sup>(108)</sup> Decision No 1753/2000/EC of the European Parliament and of the Council establishing a scheme to monitor the average specific emissions of CO<sub>2</sub> from new passenger cars.



# Sustainable consumption and production

# 4

**Strategy objective:**

*'to promote sustainable consumption and production patterns'*



## Policy Background

The World Summit on sustainable development held in Johannesburg in September 2002 put a strong emphasis on the need to change ‘unsustainable patterns of consumption and production’, reaffirming the principle adopted some 10 years before in the Rio declaration on environment and development <sup>(109)</sup> that ‘States should reduce and eliminate unsustainable patterns of production and consumption’. In 2002, the Summit, adopting the plan of implementation <sup>(110)</sup>, defined some 10 principles aimed at changing consumption and production patterns, one of the overarching objectives and essential requirements for sustainable development, along with ‘poverty eradication’ and ‘protecting and managing the natural resource base of economic and social development’.

The following year, the European Council <sup>(111)</sup> endorsed the political ambitions agreed in Johannesburg and underlined that the Union is actively committed to keep its leading role in promoting sustainable development on a global scale by translating these ambitions into concrete actions.

In 2006, the renewed sustainable development strategy stressed that the main challenge with regard to the commitment to sustainable development was ‘to gradually change our current unsustainable consumption and production patterns and the non-integrated approach to policy-making’. Reaffirming the commitment to environmental protection emphasised in the 2001 Gothenburg strategy, the renewed strategy stressed the need to ‘safeguard the earth’s capacity to support life in all its diversity, respect the limits of the planet’s natural resources and ensure a high level of protection and improvement of the quality of the environment’, while at the same time preventing and reducing environmental pollution and promoting sustainable consumption and production to break the link between economic growth and environmental degradation. This requires adherence to several of the strategy’s policy guiding principles, such as the involvement of citizens, businesses and social partners to make them aware of their responsibilities for the impacts of their production or consumption choices. It also means that social, environmental and economic considerations should be integrated in policy making and that coherence and (good) governance should be the engines of local, regional, national and global actions.

Moreover, the strategy identified ‘sustainable consumption and production’ as one of seven key challenges, with the overall objective of promoting sustainable consumption and production patterns. In order to ‘improve management and avoid overexploitation of natural resources’, the key challenge ‘conservation and management of natural resources’ also emphasised the need to improve resource efficiency and to avoid the generation of waste.

## Main changes

Changes observed since 2000 show rather positive signs of decoupling, in particular in terms of domestic material consumption, thanks to an increase in resource productivity. Production patterns also indicate some progress in terms of corporate social responsibility, and more environmentally friendly farming practices, but trends in consumption patterns are still unfavourable.

**There are some favourable signs towards more decoupling**

While domestic material consumption (DMC) had remained relatively stable from 1990 to 2000 in the EU-15, it actually decreased between 2000 and 2004, while GDP carried on increasing (albeit at a slower rate), revealing an absolute decoupling of material consumption from economic growth during that period, and an increase in resource productivity by 2.3 % per year on average. The decrease in DMC, by 0.8 % per year on average from 2000 to 2004, also represents progress towards the strategy’s objective of reducing the overall use of non-renewable natural resources. The EU trend in DMC after 2000 was mainly driven by a decrease in Germany and

<sup>(109)</sup> <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163>

<sup>(110)</sup> [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POIToc.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm)

<sup>(111)</sup> Presidency conclusions of the Brussels European Council, 20 and 21 March 2003.

France. This decrease in DMC corresponds to a decrease in domestic extraction, while imports are still increasing, albeit at a much slower rate, indicating that a shift of environmental pressures from material consumption towards non-European countries is still taking place. In terms of categories of materials, the reduction in DMC was mainly due to a decrease in consumption of construction materials, and to a lesser extent, of biomass, in particular for animal feed.

Between 1995 and 2000, municipal waste generation grew steadily in the EU-27, with an average annual growth rate of 2.5 %. Since 2000, however, waste generation has stabilised at around 520 kg per capita. Following a period of slow decrease between 1995 and 2000, landfill, the least environmentally friendly treatment method, decreased more rapidly by 4.2 % per year on average from 2000 to 2005. Incineration increased by 2.9 % per year over the same period, a relative slowdown compared to the high rate of increase of 4 % in the previous period. As a result, waste going to final disposal (landfill and incineration) decreased by 2.5 % per year from 2000 to 2005. During the same period, it is estimated that recycling increased by more than 5 % per year. This represents a slowdown compared to the previous estimated annual rate of growth of about 9 %.

Between 1990 and 2004, the EU substantially cut its overall emissions of acidifying pollutants, ozone precursors and particulate matter. This has resulted in a clear absolute decoupling of emissions of these pollutants from economic growth, both before and after 2000, although the trend slowed down from 2000 to 2004 compared to the previous period.

**Table 4.1: Evaluation of changes in the sustainable production and consumption theme (from 2000)** <sup>(112)</sup>

	EU-27	EU-15
<b>Resource productivity</b>	:	☀️
<b>Resource use and waste</b>		
Domestic material consumption	☁️☀️	☁️☀️
Municipal waste generation	☁️☀️	☁️☀️
Municipal waste treatment	☀️	☀️
Emissions of acidifying substances, ozone precursors and particulate matter	☀️*	☀️
<b>Consumption patterns</b>		
Electricity consumption by households	☁️⚡️	☁️⚡️
Final energy consumption	☁️⚡️	☁️⚡️
Food consumption	:	☀️☁️
Motorisation rate	☁️⚡️	☁️⚡️
<b>Production patterns</b>		
EMAS	:	☀️
Eco-labels	:	☀️
Area under agri-environmental commitment	:	:
Organic farming	:	☀️
Livestock density index	:	☀️



**LEGEND:**

- ☀️ favourable change/ on target path
- ☁️☀️ no or insufficient change
- ☁️⚡️ unfavourable change/far from target path
- :
- ☀️☁️ insufficient data/EU aggregate not available
- \* refers to EU-25

<sup>(112)</sup> Indicators on number of households, and household expenditure were not evaluated as they are contextual indicators. 'Area under agri-environmental commitment' was evaluated from 2001 to 2005.



**Consumption patterns are yet to become more sustainable**

EU-25 household consumption expenditure increased between 2000 and 2005 by an average annual rate of 1.4 %, a slowdown from growth between 1990 and 2000, but reflecting changes in consumers' consumption attitudes and lifestyles. The highest areas of growth during that period were expenditure on transport and communication, on recreation, and on health, all with average annual growth rates of more than 2 %. One of the main drivers behind household consumption, besides increased standard of living, is the number of households, which has been increasing in recent years.

Final energy consumption increased by 1.1 % per year on average between 2000 and 2005. A breakdown by sector shows that the highest areas of growth during this period include the services sector, with an average annual growth rate of more than 2 %, although it still only makes up around 11 % of the total. Other sectors with high rates of growth included transport and households, with an average annual growth rate of 1.3 and 1.4 % respectively, representing 31 % and 26.6 % of the total in 2005. Between 2000 and 2005, the consumption of electricity by households increased on average by 2.4 % per year in the EU-27, contributing to the rise in energy consumption of the household sector.

Per capita consumption of cereals increased at an average annual rate of 0.7 % between 2000 and 2003, and meat at an average rate of 0.8 % per year between 2000 and 2002, with poultry showing the highest growth in meat consumption (nearly 2 % annual average increase). In 2001, fish consumption increased by 4.8 % compared with 2000, following a decrease in 1999 and 2000.

The EU-27 motorisation rate is still growing, at an average rate of 1.5 % from 2000 to 2004, although this represents a slow-down compared to the decade 1990-2000.

**There is some progress in production patterns**

European businesses show a greater involvement towards corporate social responsibility (CSR), whereby companies integrate social and environmental concerns in their business strategy and operations on a voluntary basis. More and more businesses have chosen to report on their environmental performance through environmental management schemes such as EMAS, with the number of certified sites having grown at an annual average rate of 7.4 % in the EU-15 from 2000 to 2006. In addition, a rapidly increasing number of greener products and services are put on the market, with EU 'eco-label' awards growing on average by 37 % per year during the same period.

While available data do not allow an evaluation at EU level, the share of agricultural area enrolled in agri-environmental schemes increased in many Member States between 2001 and 2005, reflecting an increase in commitments to more environmentally friendly agricultural production methods that go beyond good farming practice. After a rapid increase in the EU-15 in the previous decade, organic farming further increased from 3 to 4.3 % of agricultural area, which represents a growth of 7.3 percentage points per year on average. A further indication of the trend towards less intensive agriculture is the regular decrease in the livestock density index in EU-15 since 2000, by 1.1 % per year up to 2005.

### Rationale for the selection of indicators

The selected indicators are mainly based on the objectives of the renewed EU sustainable development strategy, in particular in terms of promoting sustainable consumption and production patterns under the 'sustainable consumption and production' key challenge (see Box 4.1) and improving resource efficiency and avoiding the generation of waste under the 'conservation and management of natural resources' key challenge (see Box 5.1.). These are also derived from the conclusions of the Johannesburg plan of implementation <sup>(113)</sup>.

<sup>(113)</sup> [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POIToc.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm)

The headline indicator for this theme is ‘resource productivity’, which compares ‘domestic material consumption’ to GDP, and provides insights into the decoupling of the use of non-renewable natural resources from the growth of the economy. DMC also provides information on the overall level of use of non-renewable natural resources in the economy.

#### Box 4.1: Objectives related to sustainable consumption and production in the renewed sustainable development strategy

Overall objective: To promote sustainable consumption and production patterns	<ul style="list-style-type: none"> <li>Improving the environmental and social performance for products and processes and encouraging their uptake by business and consumers.</li> </ul>
Operational objectives and targets	<ul style="list-style-type: none"> <li>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.</li> <li>The EU should seek to increase its global market share in the field of environmental technologies and eco-innovations.</li> </ul>
<ul style="list-style-type: none"> <li>Promoting sustainable consumption and production by addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation.</li> </ul>	

The remaining (level II and III) indicators are arranged in three subthemes:

- Resource use and waste:** This subtheme seeks to monitor resource efficiency in the context of the sustainable development strategy, with the aim of reducing the overall use of non-renewable natural resources and the related environmental impacts. Additional breakdowns of ‘domestic material consumption’, in terms of components, and material category complete the headline indicator. The issue of waste generation is monitored through an indicator on ‘municipal waste generation’, used here as a proxy for ‘total waste generation by economic sector’, for which no time series are yet available. Waste generation causes environmental and health-related problems and volumes need to be reduced, as recognised in the sustainable development strategy, which seeks to avoid the generation of waste. Another indicator looks at waste disposal, via landfill or incineration. Finally, an additional indicator compares the evolution of emissions of acidifying substances, ozone precursors, and particulate matter with that of GDP, looking at one aspect of environmental impact of material consumption, and again monitoring the extent to which emissions are coupled to economic growth. This subtheme should also include indicators on recycling and ‘hazardous’ waste when data become available. The intention is to replace the current resource productivity indicator with one based on ‘total material consumption’ (including hidden upstream flows related to imports) when data become available. The need for indicators on the environmental impact of material consumption has also been identified to complete this subtheme. The indicator ‘energy intensity’, included in the socioeconomic development chapter, is also related to this subtheme. Emissions of greenhouse gases are covered in the climate change and energy chapter.
- Consumption patterns:** Two indicators provide background information on consumption: the indicator on the number of households provides information on one of the drivers of consumption, while the indicator on household expenditure per capita per category shows the evolution of patterns of consumption as reflected through consumer spending. Consumption patterns are then monitored through three major areas of consumption which have important environment impacts: ‘electricity consumption by EU households’, ‘food consumption’, and the ‘motorisation rate’. The breakdown of ‘final energy consumption’ by category provides an overview of the major sources of energy consumption. Other indicators that have been identified as to be developed in



this subtheme are indicators on 'green public procurement', on the 'share of consumption of products with an eco-label', and on 'electricity consumption per dwelling for lighting and domestic appliances,' to target more specifically unsustainable trends than with 'electricity consumption by households'.

### Potential linkages

#### Linkages within sustainable consumption and production

Issues within this theme are closely inter-linked. Consumer preferences are the underlying driver for production patterns – for example demand for organic products drives the development of organic agriculture. Unsustainable consumption and production patterns increase the use of natural resources, which in turn generates more waste. More sustainable consumption patterns, with increased reuse and recycling would reduce the need for raw natural resources.

#### Linkages with the economic dimension

Sustainable consumption and production are particularly closely linked to socioeconomic development. Economic growth and increased standards of living without changes in consumption patterns, give rise to greater needs for products and services, thus increasing natural resource use and waste generation. To reach sustainable production and consumption, much can be expected from the outcomes of technological development, especially through enhanced research and innovation. This technology would also make the European economy more competitive, underlining a strong link with issues dealt with in the 'innovation, competitiveness and eco-efficiency subtheme'.

#### Linkages with the social dimension

With the current ageing of society, consumption may also be reoriented towards specific goods and services, including the health and tourist sector. There is also a link with social inclusion, since different income categories generally have different consumption patterns.

#### Linkages with environmental issues and health

Consumers have a direct impact on the environment, whether through food consumption, transport, or housing. There is a symmetric impact in terms of production patterns. More intensive agriculture generally has a negative impact. On the other hand, a more environmentally friendly agriculture and more extensive livestock rearing have a beneficial effect on biodiversity, landscape conservation, water resources, and climate change. Corporate social responsibility can contribute to a reduction of environmental pressure from businesses and raise environmental awareness amongst consumers, encouraging them to buy green and fair-trade labelled products.

Food consumption has a substantial impact on health. More generally, some consumption and production patterns can induce lifestyle-related diseases, some of which are reported on in the public health chapter.

#### Linkages with climate change, energy and transport

Both consumption and production patterns are key in tackling climate change. Consumers and businesses have a major role in reducing their greenhouse gas emissions, for example through the motorisation rate and companies' vehicle fleets.

An increase in resource use and waste generation engenders more demand for transport and for infrastructures aimed at transporting and disposing of quantities of materials, whether biomass, minerals or fossil fuels, all having differing characteristics and thus impacts, on the environment.

#### Linkages with global partnership

There is also an indirect link with global partnership issues. Changes in consumption patterns translate into consumption of materials, which are increasingly imported from outside the EU, affecting the state of the environment and economic development in the exporting countries.



There is a risk that an increase in EU resource productivity is the result of shifting resource-intensive industries abroad and increasing imports from overseas. On the other hand, an increase in consumer preferences for environmentally friendly and fair-trade products can have a positive impact on trade and development.

Changing consumption and production patterns is one of the major challenges of the sustainable development strategy and will require integrated and coherent policy making. Economic instruments can provide powerful incentives to change behaviours, and one of the policy guiding principles of the strategy is to ensure that prices reflect the real costs to society of consumption and production activities.

Linkages with  
good governance

#### Further reading on sustainable consumption and production in Europe

Thematic strategy on the sustainable use of natural resources, COM(2005) 670

Taking sustainable use of resources forward — A thematic strategy on the prevention and recycling of waste, COM(2005) 666

Development of agri-environmental indicators for monitoring the integration of environmental concerns into the common agricultural policy COM(2006) 508

Implementing the partnership for growth and jobs: making Europe a pole of excellence on CSR, COM(2006) 136

*Material use in the European Union, 1980-2000: indicators and analysis*. 2000 edition, Eurostat working papers and studies. Theme 2, Economy and finance, European Union, 2002

*Integration of environment into EU agriculture policy — the IRENA indicator-based assessment report*, EEA report 2/2006



## Headline indicator

## Resource productivity

**Definition:** Resource productivity is **GDP divided by domestic material consumption**.

Domestic material consumption (DMC) 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 the focal economy, plus all physical imports minus all physical exports. It is important to note that 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.



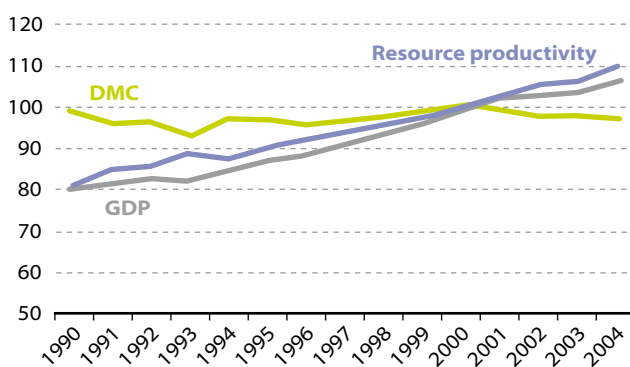
## Indicator relevance

One of the main objectives in the renewed sustainable development strategy, under the key challenge of sustainable consumption and production, is to decouple economic growth from environmental degradation. Under the key challenge 'conservation and management of natural resources', another objective is '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 resources at a rate that does not exceed their regeneration capacity'.

Resource productivity is an aggregate measure of the material efficiency of an economy and provides insights into whether decoupling between the use of natural resource and economic growth is taking place. Taken on its own, DMC also provides an assessment of the absolute level of use of scarce resources. In environmental terms DMC can be seen as an indicator that reflects all materials that are emitted from or accumulated in a given region. As accumulated materials (i.e. physical stocks) will turn into emissions and wastes at some point in time in the future, the indicative value of DMC is the waste potential of a given region.

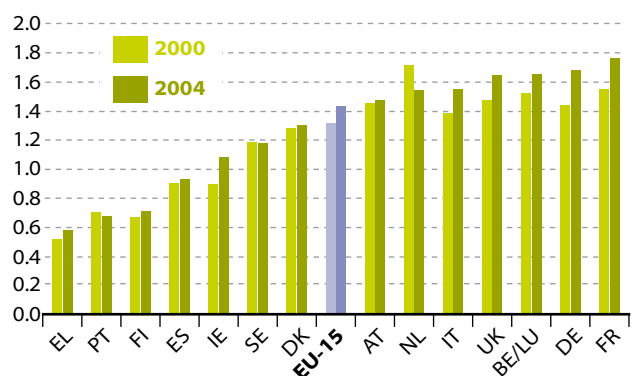
DMC is used as a proxy for the more relevant indicator, total material consumption (TMC), which includes upstream hidden flows related to imports and exports of raw materials, finished and semi-manufactured products. EU level TMC is still under development as few Member States are able to calculate it at this stage. In addition, DMC and TMC are only a rough proxy for measuring the overall environmental impact of resource use, as materials have very different impacts on the environment. An indicator on the environmental impact of material use needs to be developed.

**Figure 4.1: EU-15 resource productivity over time**  
(index 2000=100)



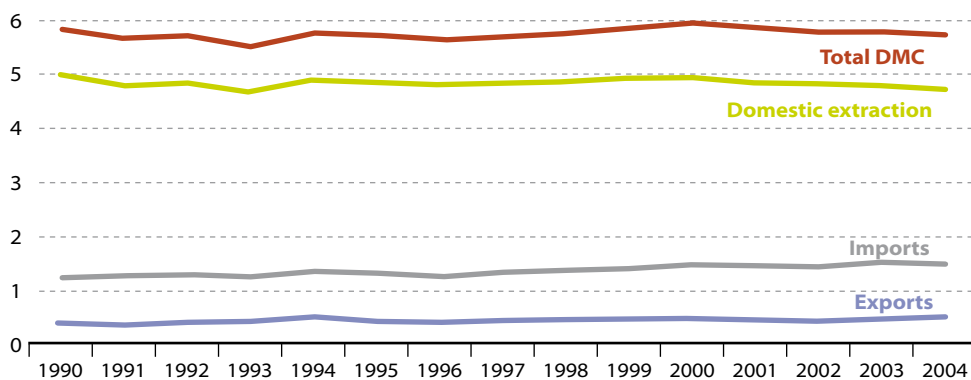
Source: Eurostat.

**Figure 4.2: Resource productivity by country**  
(EUR/kg)



From 1990 to 2000, domestic material consumption was relatively stable, while GDP was increasing, resulting in relative decoupling<sup>(114)</sup>, and an increase in resource productivity of 2.1 % per year on average. From 2000 to 2004, the slow down in GDP growth was accompanied by a decrease in DMC, resulting in absolute decoupling of resource use from economic growth over that period, and a further increase of resource productivity by 2.3 % per year on average. The decrease in DMC, by 0.8 % per year on average from 2000 to 2004, also represents progress towards the strategy's objective of reducing the overall use of non-renewable natural resources.

Looking at the country breakdown of resource productivity, it becomes apparent that this increase in productivity was driven by a few countries where the increase was particularly strong. From 2000 to 2004, resource productivity increased by almost 5 % per year on average in Ireland, by almost 4 % per year in Germany, and also by more than 3 % per year in France and Greece. This reflects different realities behind the increase in the aggregate. The increase in productivity stemmed from a relatively stable DMC in Ireland, and even an increase in Greece, while GDP increased proportionally more strongly in both countries. In Germany and France, DMC actually decreased, whereas the increase in GDP was moderate. Despite the strong increase in Greece, it was still the country with the lowest resource productivity with less than EUR/kg 0.6 in 2004, whereas the highest resource productivity was found in France, Germany, Belgium and Luxembourg, and the UK, all with more than EUR/kg 1.6.



**Figure 4.3:**  
EU-15 DMC by  
component (billion  
tonnes)

Source: Eurostat.

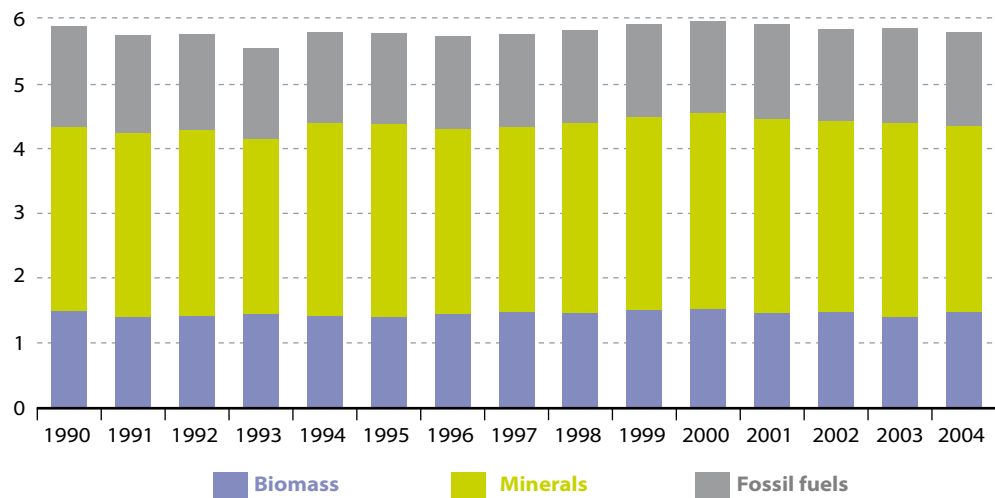
A closer look at the components of DMC shows that the recent trend is a result of a decrease in Domestic extraction, by 1 % on average per year between 2000 and 2004, whereas it had been more or less stable between 1990 and 2000. Imports carried on increasing at 0.6 % per year between 2000 and 2004, but at a much slower rate than during the 1990-2000 period, when the average annual growth rate was 1.8 %. Although the rate of growth has slowed down, this continued increase still means that some of the environmental pressures of material consumption continue being shifted outside Europe, particularly since DMC does not include the hidden flows related to imports. Exports, which had increased drastically during the first period by as much as nearly 3 % per year, have also slowed down, to an average increase of 0.8 % per year. Again, indirect flows related to exports are not included in DMC.





**Figure 4.4: EU-15  
DMC by material**  
(billion tonnes)

Source: Eurostat.



In 2004, nearly half of domestic material consumption was in the form of minerals, 94 % of which were for construction. Biomass (80 % of which for food and animal feed) and fossil fuels constituted roughly the two other quarters. The decrease of DMC between 2000 and 2004 was mostly driven by a decrease in mineral consumption, by 1.3 % per year on average, mainly construction minerals. Biomass consumption also decreased, to a lesser extent (0.9 % per year), mainly driven by a decrease in animal feed. The consumption of fossil fuels increased slightly, by 0.6 %.

## Municipal waste generation



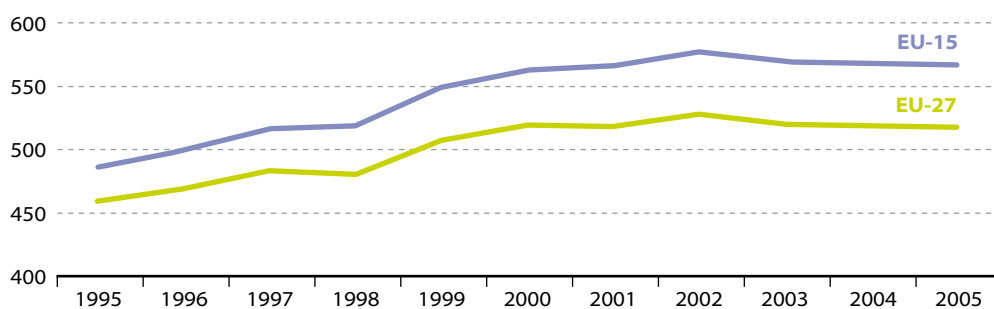
**Definition:** The indicator presents the amount of municipal waste generated. It consists of waste **collected by or on behalf of municipal authorities and disposed of through the waste management system**. The bulk of this waste stream is from households, though ‘similar’ waste streams from sources such as commerce, offices, and public institutions are also included. For areas not covered by a municipal waste scheme an estimation has been made of the amount of waste generated.

In the renewed strategy, one of the operational objectives and targets of the key challenge ‘conservation and management of natural resources’, is ‘avoiding the generation of waste and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling’.

The thematic strategy on the prevention and recycling of waste <sup>(115)</sup> sets out guidelines and describes measures aimed at reducing the pressure on the environment caused by waste production and management. The aim of the strategy is to reduce the negative impact on the environment that is caused by waste throughout its life-span, from production to disposal, via recycling. This approach means that every item of waste is seen not only as a source of pollution to be reduced, but also as a potential resource to be exploited.

The EU framework directive on waste <sup>(116)</sup> lays down measures with a view to reducing the overall environmental impacts related to the use of resources, of the generation and management of waste. For the same purposes, it also makes provisions whereby the Member States are to take measures, as a matter of priority, for the prevention or reduction of waste production and its harmfulness and, secondly, for the recovery of waste by means of reuse, recycling and other recovery operations (avoid ‘elimination’, prefer ‘treatment and disposal’).

‘Municipal waste per capita’ is used here as a proxy for ‘total waste generation’, which will be compared to GDP when available.



### Indicator relevance

<sup>(115)</sup> Taking sustainable use of resources forward — A thematic strategy on the prevention and recycling of waste, COM(2005) 666.

<sup>(116)</sup> Directive 2006/12/EC of the European Parliament and of the Council on waste.

**Figure 4.5:**  
Municipal waste generation  
(kg per capita)

Source: Eurostat.

From 1995 to 2000, waste generation per capita increased continuously from 458 to 518 kg in the EU-27, with an average annual growth rate of 2.49 %. This steady growth however stalled after 2000, with no further significant growth up to 2005. In the EU-15, the higher growth rate of almost 3 % per year on average during the previous decade has slowed right down, to 0.2 % per year between 2000 and 2005.

### Analysis



The figures at EU-27 level mask a variety of situations across Member States (see country breakdown on the SDI website). Most of the countries of the last two enlargements are well below the EU average. In 2005, the lowest waste generation was found in Poland, Slovakia and the Czech Republic, with less than 300 kg per capita. At the other end, more than 700 kg of municipal waste per capita was generated in Ireland, Cyprus, Denmark, and Luxembourg.

## Municipal waste treatment

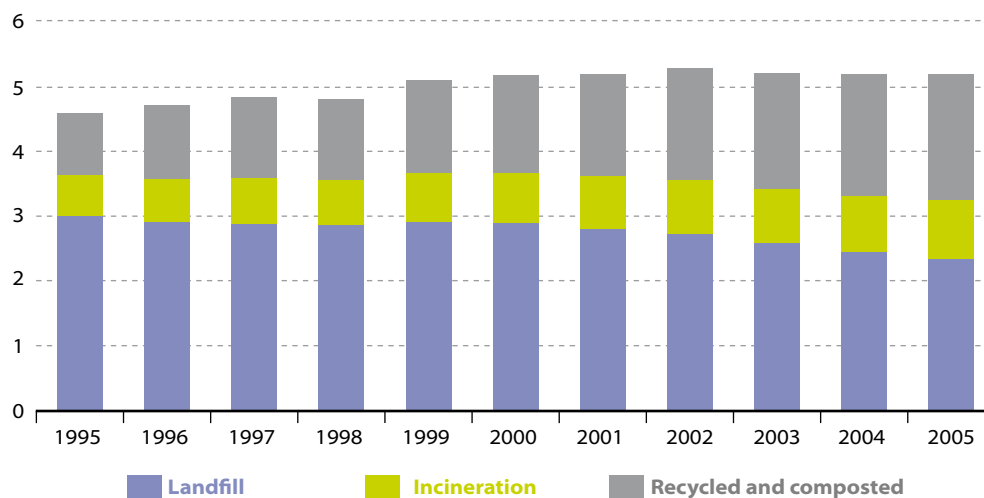


**Definition:** This indicator presents the **amount of municipal waste disposed of through landfill, or through incineration with or without energy recovery** (see ‘methodological notes’). The bulk of this waste stream is from households, though similar wastes from sources such as commerce, offices and public institutions are included. The amount of recycled and composted waste is estimated as the difference between municipal waste generated and the amounts landfilled and incinerated.

The renewed strategy explicitly seeks to increase resource use efficiency by ‘applying the concept of life-cycle thinking and promoting reuse and recycling’. Landfilling is the most widespread disposal and treatment method of municipal waste but this method generates environmental damage causing air, water and soil pollution. The landfill directive <sup>(117)</sup> is intended to prevent or reduce the adverse effects of the landfill of waste on the environment, in particular on surface water, groundwater, soil, air and human health.

Incineration operations generate emissions of air pollutants such as NO<sub>x</sub>, SO<sub>2</sub> and particulates, and CO<sub>2</sub> which is one of the main greenhouse gases contributing to global warming. In addition, heavy metals and dioxins are emitted to the air from incinerators and a residue remains after the incineration process, which is usually landfilled. The waste incineration directive <sup>(118)</sup> aims to prevent or to reduce as far as possible negative effects on the environment caused by the incineration and co-incineration of waste.

EU policy gives preference to waste prevention, then to recovery (reuse, recycling, composting and incineration with energy recovery and composting), incineration without energy recovery, and, as a last resort, landfill, considered as the least environmentally friendly method.



### Indicator relevance

<sup>(117)</sup> Council Directive 1999/31/EC on the landfill of waste.

<sup>(118)</sup> Directive 2000/76/EC of the European Parliament and of the Council on the incineration of waste.

**Figure 4.6: EU-27 municipal waste treatment, by type of method (kg per capita)**

NB: ‘Recycled and composted’ waste is estimated as the difference between municipal waste generated and the amounts landfilled and incinerated.

Source: Eurostat.

Landfilled waste decreased by an average annual rate of 0.5 % between 1995 and 2000 in the EU-27. The decrease was much sharper however in the following period, up to 2005, with an average annual rate of 4.2 %.

### Analysis



By contrast, incineration of municipal waste has continued to grow between 2000 and 2005, by 2.9 % per year on average in the EU-27 level but at a slower rate than the previous period, between 1995 and 2000, when the average annual growth rate was 4 %.

Between 2000 and 2005, municipal waste going to final disposal through landfill or incineration decreased by 2.5 % on average per year, resulting in an overall decrease of almost 12 % in the EU-27; whereas it had remained stationary between 1995 and 2000. Based on the assumption that what is not landfilled or incinerated is recycled or composted, this reduction in final disposal corresponds to an increase in recycling and composting of more than 5 % per year on average between 2000 and 2005, which represents a slowdown compared to the previous annual rate of decrease of around 9 %.





## Emissions of acidifying substances, ozone precursors and particulate matter



**Definition:** These indicators track trends in **anthropogenic atmospheric emissions of: acidifying substances** (sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and ammonia (NH<sub>3</sub>)); **ozone precursors** (NO<sub>x</sub>, carbon monoxide (CO), methane (CH<sub>4</sub>), and non methane volatile organic compounds (NMVOC)), by sector; and **primary particles and secondary particulate precursors** (SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, particulate matter (PM10)).

Acidifying substance emissions are combined in terms of their acidifying effects, and expressed in acid equivalents. Ozone precursor emissions are combined in terms of their tropospheric ozone-forming potential, and expressed in NMVOC equivalents. Particulate and particulate precursor emissions are combined in terms of their particulate-forming potential and expressed in terms of particulate forming equivalents.

Airborne acidifying substances, ozone and particulate matter cause, either alone, or through chemical reaction, a wide-range of inter-related, local and transboundary problems. Airborne acid emissions can cause damage to ecosystems, in particular soil, forests and water bodies, to buildings and materials. Tropospheric ozone is harmful to human health by affecting the respiratory system, to crops, forests, and materials and contributes to climate change. Fine particulates (PM10), i.e. particulates whose diameter is less than 10 micrometres, can be carried deep into the lungs where they can cause inflammation and a worsening of the condition of people with heart and lung diseases.

Emissions of these pollutants are therefore covered by a set of legislative instruments, including the 1999 Gothenburg Protocol to the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution (CLRTAP) to abate acidification, eutrophication and ground-level ozone, and by the EU national emission ceilings directive (NECD) <sup>(119)</sup>. In 2005, the Commission adopted a thematic strategy on air quality <sup>(120)</sup>, which, building upon the CLRTAP, foresees a simplification and/or revision of previous ambient air quality legislation, with new objectives for emission ceilings to be attained by 2020.

Comparing emissions of these pollutants to GDP also provides an assessment of the objective of the renewed strategy, of 'decoupling economic growth from environmental degradation'.

### Indicator relevance

<sup>(119)</sup> Directive 2001/81/EC of the European Parliament and of the Council on national emission ceilings for certain atmospheric pollutants.

<sup>(120)</sup> Thematic strategy on air pollution, COM(2005) 446.

Between 1990 and 2004, emissions of acidifying pollutants decreased significantly in most European countries. In EU-25, the average decrease slowed down from 5.7 % per year between 1990 and 2000 to 2.8 % from 2000 to 2004. The main emitting sector during the 1990s, energy industries (28.7 % of total emissions in 2004 versus 38.5 % in 1990), has now been exceeded by agriculture (31.7 % in 2004); transport follows at a distance (21.7 %).

Emissions of ground-level ozone precursors also experienced important reductions in the EU-25, with an annual average decrease of 3.7 % annually between 1990-2000, and 2.9 % over 2000-2004. The highest contribution to total emissions comes from the transport sector, but its share has been brought down from 50.7 % in 1990 to 44.7 % in 2004, thanks to the more widespread use of catalytic converters and greater penetration of diesel. If some of these benefits

### Analysis

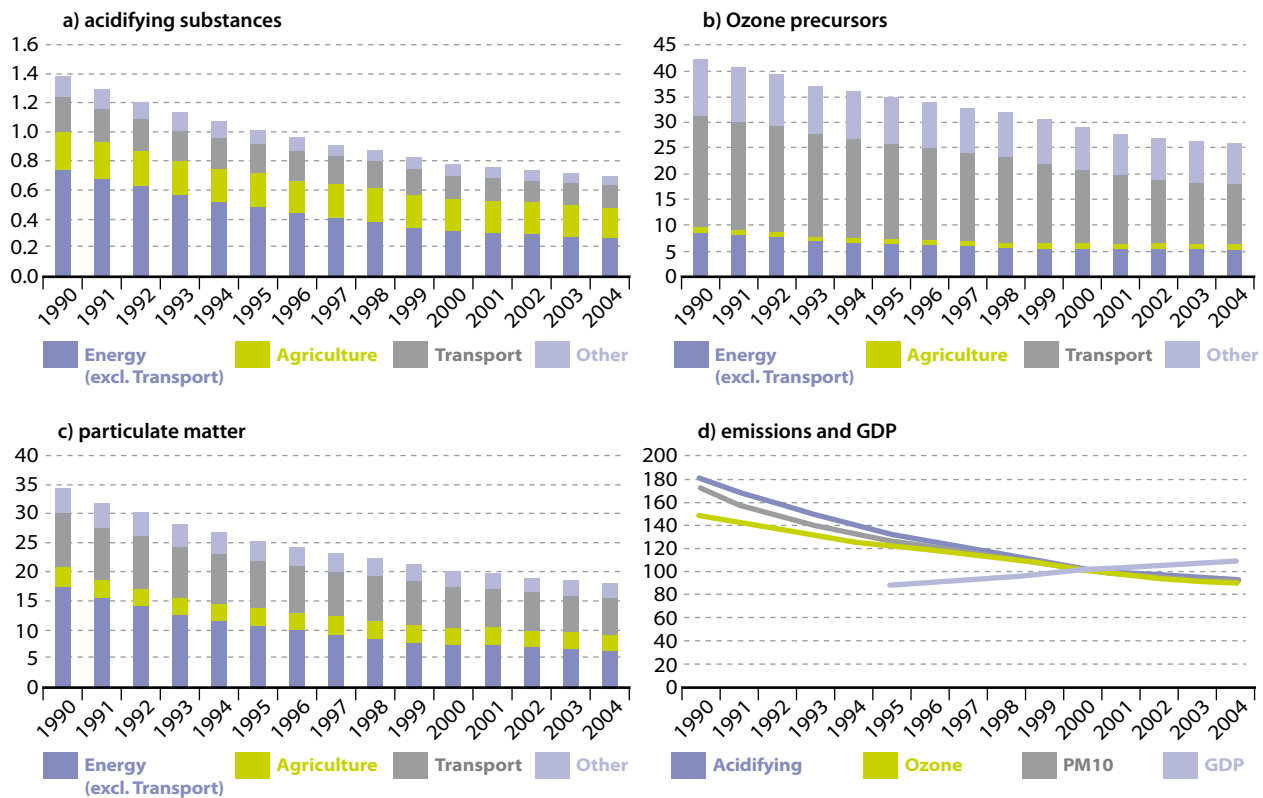


have been offset by a growth in traffic, the decline of emissions from this sector has remained the most substantial, reaching 4.1 % annually until 2000 and 4.8 % over the four following years. The decline in agriculture (1.5 % on average until 2000 and 1 % from 2000 onwards) is linked to cuts in emissions of CH<sub>4</sub>, which is monitored under the Kyoto Protocol (see Climate change chapter); In the energy sector, the 4.4 % annual pace of decline observed during the 1990s, has slowed down to 0.3 % per year between 2000 and 2004<sup>(121)</sup>.

Emissions of particulate matter decreased more slowly from 2000 to 2005, with an average annual decrease of 2.6 %, compared to 5.2 % from 1990 to 2004. The main contributing sector is still energy, with 37 % of total emissions, but having decreased from nearly 52 % in 1990. Transport is also an important source, with almost 34 % of emissions in 2004.

<sup>(121)</sup> See assessment of EEA core set indicator CSI 002 (<http://themes.eea.europa.eu/IMS/CSI>).

**Figure 4.7: EU-25 weighted emissions (a) of acidifying substances (million tonnes acid equivalents); (b) of ozone precursors (million tonnes NMVOC equivalents); (c) of particulate matter (million tonnes particulate forming equivalents); and (d) of pollutants vs GDP (index 2000=100)**



NB: See 'methodological notes' for composition of categories.

Source: European Environment Agency, Eurostat.

There is a clear absolute decoupling of emissions of all three pollutants from economic growth, both before and after 2000. This decoupling decreased after 2000 however, as both the decrease in emissions of pollutants and the increase in GDP slowed down from 2000 to 2004 compared to the previous period.

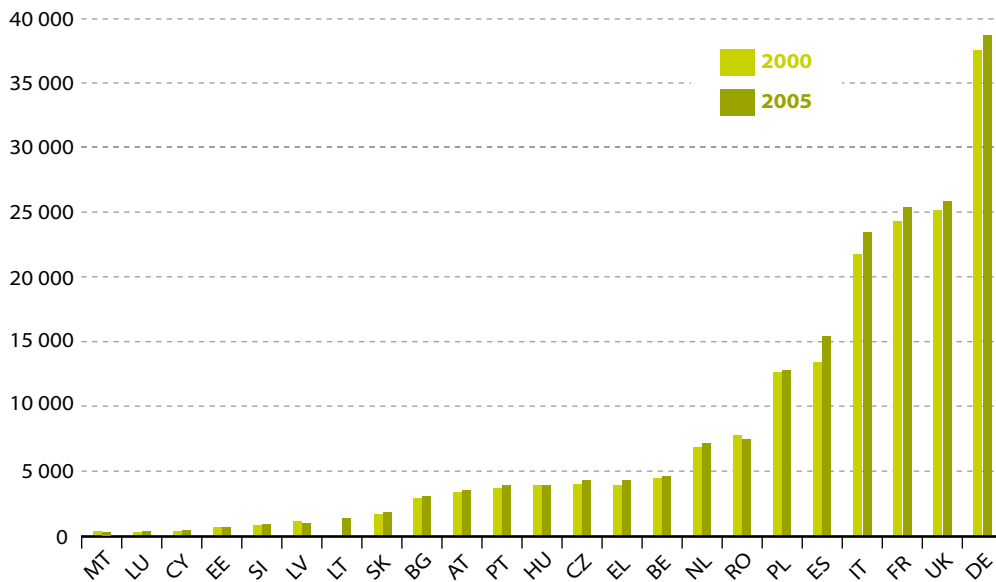
## Number of households



**Definition:** This indicator reports on the **number of private households**. Private households are either a one person household or a multi-person household, i.e. a group of two or more persons who combine to occupy the whole part or part of a housing unit and to provide themselves with food and possibly other essentials for living; collective households such as boarding houses, halls of residence and hospitals are excluded.

The number of households and their composition, whether including couples or single adults, with or without dependent children, has changed in the last decades. These changes have far-reaching social, economic and environmental consequences and determine households' consumption patterns in all domains (such as land use, quantities of goods needed, total energy and water consumption, transport and waste arising in general).

### Indicator relevance



**Figure 4.8: Number of households**  
(1 000s)

NB: No data for DK, IE, FI and SE in 2000 and 2005; no data for LT in 2000. 2001 data used for 2000 for BG, LV, PL.

Source: Eurostat.

Between 2000 and 2005, the number of households increased in most countries for which data were available, with the exception of Malta, Estonia, Latvia and Romania, where there was a decrease. The increase was highest in Spain, Greece, and Cyprus, where the growth in the number of households was more than 2 % per year on average. There is also a trend towards smaller households. In 2005, 25 % of the population living in private households were living in households with two adults without dependent children, 12 % were single adults living alone, and 4 % were single adults living with dependent children <sup>(122)</sup>.

### Analysis

<sup>(122)</sup> *Living conditions in Europe — Data 2002-2005*, 2007 edition. Eurostat pocketbooks.



## Consumption patterns

## Household expenditure

**Definition:** The indicator is defined as **household expenditure by category**, expressed in euro per capita at 1995 constant prices. Household expenditure refers to any spending done by a person living alone or by a group of people living together in shared accommodation and with common domestic expenses.

It includes expenditure incurred on the domestic territory (by residents and non-residents) for the direct satisfaction of individual needs and covers the purchase of goods and services, the consumption of own production (such as garden produce) and the imputed rent of owner-occupied dwellings.



## Indicator relevance

<sup>(123)</sup> *Environmental impacts and products – analysis of the life cycle environmental impacts related to the final consumption of the EU-25.* Institute for Prospective Technological Studies (IPTS) and European Science and Technology Observatory (ESTO), 2005.

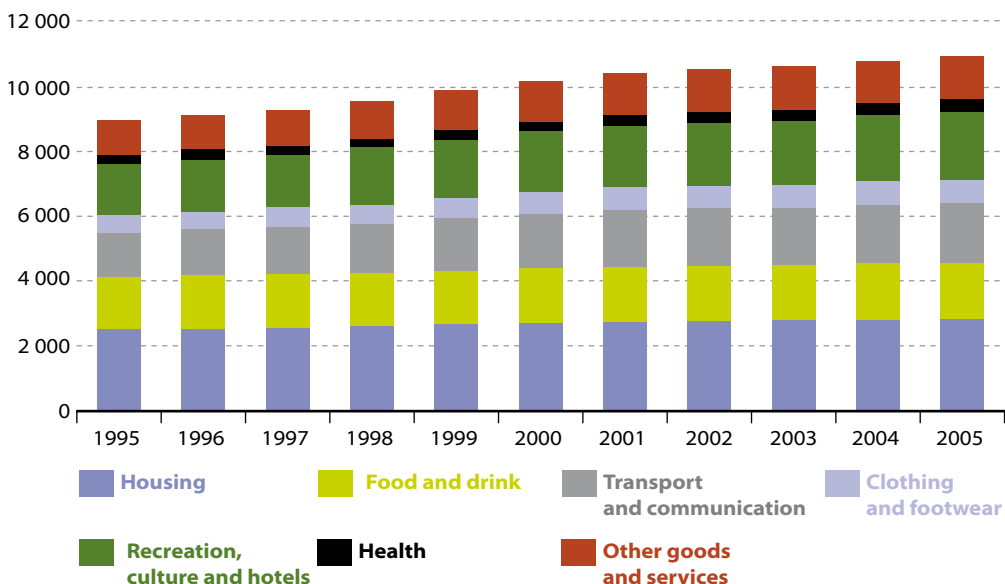
<sup>(124)</sup> *Household consumption and the environment*, EEA report No 11/2005.

The EU renewed strategy for sustainable development emphasises the overall objective ‘to promote sustainable consumption and production patterns’ (Box 4.1). Actions should aim, amongst others, to raise awareness among citizens and change unsustainable consumption habits.

Consumption expenditure gives an indication of the structure of these consumption patterns, and associated pressure on the environment. Categories which have been identified as having the highest environmental impact include transport, food production, heating and construction <sup>(123)</sup>. Households play an important role in the final choice about the consumption of goods and services and although the environmental impact of each household is relatively small compared to that of production activities, millions of households in Europe are major contributors to environmental problems such as climate change, air pollution, water pollution, land use and waste <sup>(124)</sup>.

**Figure 4.9:** EU-25 consumption expenditure of private households by category (EUR per capita at 1995 constant prices)

Source: Eurostat.



## Analysis

Between 1995 and 2005 consumption expenditure at EU-25 level, expressed in EUR per capita at 1995 constant prices, increased by almost one fifth, from EUR 8 855 in 1995 to EUR 10 778 in 2005. The average annual growth rate slowed down after 2000, with a rate of 1.4 % up to 2005, compared to 2.7 % in the previous period.

Throughout the period considered, the main category of expenditure has been housing (28 %), which includes expenditure related to the use of energy and water, waste and furnishings. Food and drink was the second most important category in 1995, but has been superseded by recreation in 2005 (18 %) which took the second place. Food and drink is now the third most important category, at the same level as transport and communication (both at 16 %).

The highest areas of growth from 1995 to 2000 were expenditure on transport and communication, and on recreation, both categories with annual growth rates of more than 4 %. This growth slowed down to about 2 % for both categories in the period 2000 to 2005. Expenditure on health has been growing constantly throughout both periods at about 2 % per year.



## Consumption patterns

## Electricity consumption by households

**Definition:** The indicator is defined as the **quantity of electricity consumed by households**. Household consumption covers all use of electricity used for space and water heating and all electrical appliances.



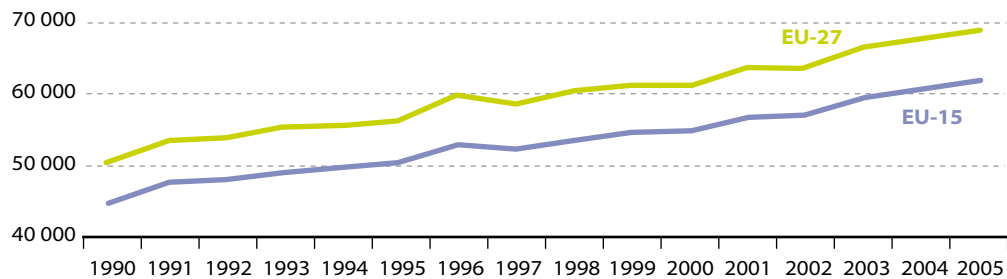
## Indicator relevance

<sup>(125)</sup> Directive 92/75/EEC on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances.

Growing electricity consumption by households contributes to the persistence of 'unsustainable trends' in energy use. The strategy aims to raise 'awareness among citizens' and to change 'unsustainable consumption habits'. There are a number of electricity-saving policies, in particular through the introduction of mandatory labels stating the energy efficiency grade for specific household appliances <sup>(125)</sup>, of minimum energy efficiency requirements for household electric refrigerator and freezers <sup>(126)</sup>, and of the new energy classes A+ and A++ for the most efficient appliances <sup>(127)</sup>.

**Figure 4.10:**  
Electricity consumption by households  
(1 000 tonnes of oil equivalent)

Source: Eurostat.



<sup>(126)</sup> Directive 96/57/EC on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof.

## Analysis

<sup>(127)</sup> Directive 2003/66/EC with regard to energy labelling of household electric refrigerators, freezers and their combinations.

<sup>(128)</sup> Which are estimated to amount to approximately 5-10 % of EU household energy consumption. See EEA assessment.

A relatively strong and regular increase in household electricity consumption can be observed over the last 15 years. Consumption grew in parallel in both the EU-27 and the EU-15 by 1.6 % per year on average between 1990 and 2000, with the average annual rate of growth then increasing to 2.4 % between 2000 and 2004. This upward trend is ascribable to several factors, including increasing wealth and changed lifestyles demanding greater comfort and more home equipment, and an increasing number of (in particular smaller) households and corresponding needs for electrical appliances. Improvements in the eco-efficiency of many powered goods have been offset by their growth in number. Of concern is also the growing number of smaller appliances such as videos and computers and the growing level of electricity consumption from appliances in 'stand-by mode' <sup>(128)</sup>.

## Final energy consumption



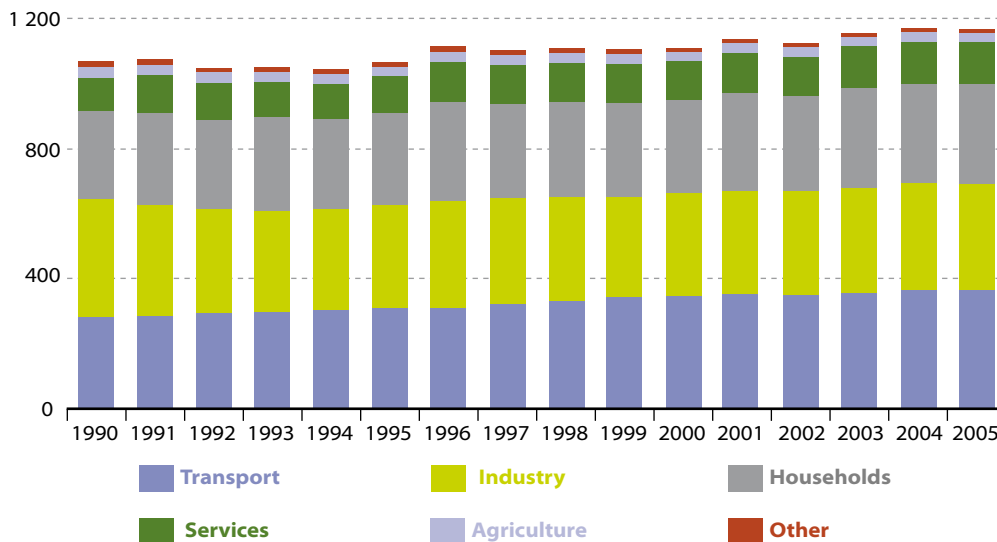
**Definition:** Final energy consumption represents the **energy supplied to the final consumer for all energy uses.**

The consumption of energy leads to emissions of greenhouse gases and other harmful substances, depletes the earth's limited stock of fossil fuels and contributes to the EU's dependence on other regions. Despite increases in energy efficiency over the past 30 years, final energy consumption has continued to grow.

The renewed SDS refers to the target set in the directive on energy end-use efficiency and energy services <sup>(129)</sup> of achieving savings of 9 % of final consumption by 2017. These savings will be achieved through a variety of measures, including improved insulation, the introduction of more efficient equipment and appliances, better management, shifts to more energy-efficient modes of transport, and training and education. These savings cannot be estimated by directly monitoring EU level energy consumption, as savings are defined as measures and/or estimates of consumption before and after implementation of one or more energy efficiency improvement measures. Under the directive, Member States are to report their estimates of energy savings according to a harmonised method.

### Indicator relevance

<sup>(129)</sup> Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC.



**Figure 4.11:** EU-27 final energy consumption by sector (million tonnes of oil equivalent)

Source: Eurostat.

Since 1990, final energy consumption in the EU-25 has grown by 9.4 % overall, with an annual growth rate of 0.5 % until 2000 and of 1.1 % since 2000. The transport sector has grown fastest, by about 30 % since 1990.

### Analysis

The economic development in the services sector at the expense of industry in many European countries, has led to a rapid rise of energy consumption in this sector, at around 1 % annu-



ally until 2000 and more than 2 % per year since 2000. Nevertheless, overall consumption by the services sector still only made up some around 11 % of total final energy consumption in 2005. In transport, currently the biggest energy-consuming sector with 31 % of total final energy consumption, growth was strongest in the years before 2000 (2.0 % annually compared with 1.3 % per year from 2000 to 2005). The important growth in the demand for transport, reflecting economic growth, globalisation and increased mobility, is responsible for the prominence of transport as a major energy-consuming sector. The sustained growth in household consumption, of 0.8 % up to 2000 and 1.4 % annually since 2000 reflects changes in household structure which translated into greater demand for domestic appliances (see 'electricity consumption by households') and thus increased energy consumption although the latter which made up 26.6 % of the total in 2005, is also largely dependent on weather conditions (for heating purposes).

The industry sector has historically been the highest or second-highest energy-consuming sector. Between 1990 and 2000, its energy consumption declined by 1.3 % per year on average while it increased slowly, by 0.2 % per year, between 2000 and 2005, when its share of final energy consumption was 27.9 %. The downward trend observed in the 1990s can be partially explained by the move away from traditional heavy industry to a more service-oriented economy and to the shift towards less energy-intensive manufacturing industries. Nevertheless these positive changes have been offset by increased demand for transport in the current decade.

Agriculture has remained a small consumer of energy with 2.5 % of final energy consumption in 2005, decreasing by 1.1 % annually between 2000 and 2005, and remaining stable between 1990 and 2000.



## Food consumption



**Definition:** This indicator presents the **gross human apparent consumption** of some major food items (cereals, meat and fish), expressed in kg per inhabitant.

Gross apparent human consumption is a proxy indicator of the availability of food to the consumer but not of the actual consumption by households (see methodological notes).

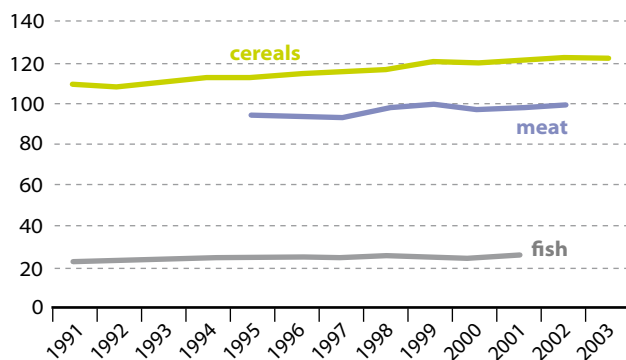
Changes in both consumption and production are important to ensure more sustainable food consumption patterns in Europe. In recent decades there have only been minor changes to the total quantity of food we consume. However, there have been marked changes in the composition of our diets and the way food is produced and sold. Our eating and drinking habits lead to significant environmental pressures, often indirectly through agricultural production, processing and transportation of the food we consume. Recent evidence showed in particular that within food consumption, meat and meat products have the greatest environmental impact<sup>(130)</sup>. The indicator monitors changes in food consumption at the consumer level and the objective of the renewed strategy of changing unsustainable consumption habits.

In the past, European consumers' demands for different food products have mainly been driven by growth in incomes, demographic shifts and lifestyle changes. However, recent food safety problems such as BSE (mad cow disease), foot and mouth disease, avian flu and salmonella, and also soft drink contamination, have led to a stronger focus on food-safety and health.

### Indicator relevance

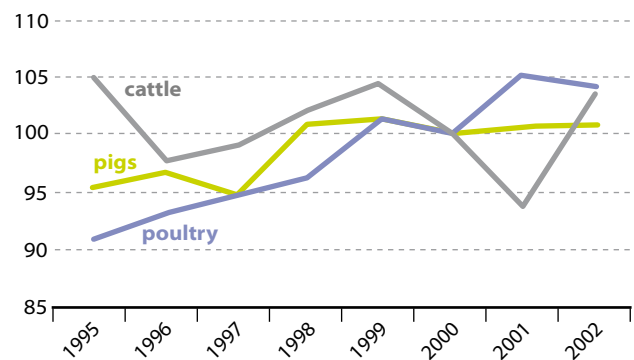
<sup>(130)</sup> Environmental impact of products (EIPRO) — Analysis of the life cycle environmental impacts related to the final consumption of the EU-25, 2006. European Commission, Joint Research Centre.

**Figure 4.12: EU-15 gross apparent human consumption (kg per capita)**



Source: Eurostat.

**Figure 4.13: EU-15 gross apparent human consumption by product (index 2000=100)**



Source: Eurostat.

The EU-15 gross apparent consumption of cereals per capita grew, during the period 1991-2000, at an average annual rate of 1 %, from 108.3 to 118.9 kg per capita. Over the following period, from 2000 to 2003, the average annual growth rate was 0.7 %, and consumption reached 121.2 kg per capita in 2003, common wheat and durum wheat representing around three-quarters of the total.

### Analysis



The availability of fish per capita increased over the period 1991-2000, by an average annual growth rate of 0.6 %. From 2000 to 2001, fish availability increased by 4.8 %, following a decrease in 1999 and 2000.

Meat availability per capita increased by an average annual growth rate of 0.6 % over the period 1995-2000, with a higher average annual growth rate (0.8 %) from 2000 to 2002. In 2002, pig meat represented 44.4 % of the total meat availability, followed by poultry with 23.7 %, and cattle 20.3 %. The highest growth in meat consumption was in poultry, which increased by nearly 2 % per year on average throughout the period from 1995 to 2002.

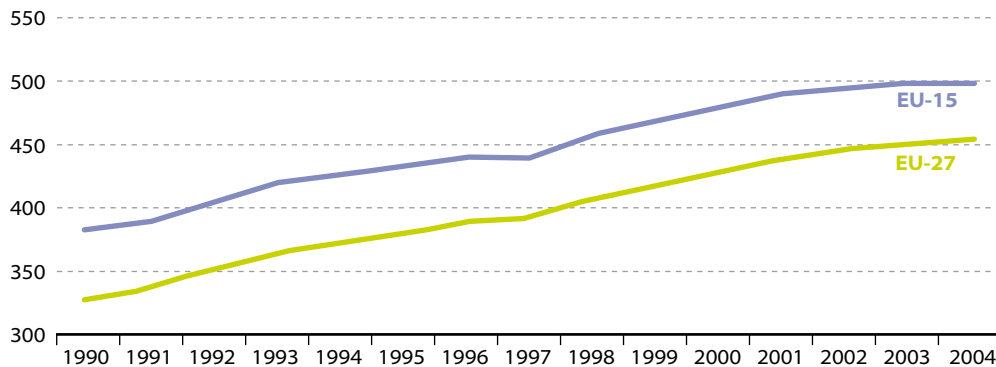
## Motorisation rate



**Definition:** This indicator is defined as the **number of passenger cars per 1 000 inhabitants**. A passenger car is a road motor vehicle, other than a motorcycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver); the term passenger car therefore covers microcars (need no permit to be driven), taxis and hired passenger cars, provided that they have fewer than 10 seats; this category may also include pick-ups.

The travel behaviour of consumers has a great influence on many aspects of sustainable development, especially with regard to the increasing dependence on the passenger car. Passenger cars provide great flexibility of access to employment and essential services such as education, health and shops, as well as for cultural and social activities and for tourism and holidays. But road vehicles also produce pollution, noise and waste, consume large quantities of energy, and are responsible for accidents and impacts on human health. Often these pressures and impacts are greater for cars than would be the case for an equivalent journey by bus, tram, train, whereas cycling or walking do not have any negative environmental impacts.

### Indicator relevance



**Figure 4.14:** Motorisation rate of passenger cars (number of passenger cars per 1 000 inhabitants)

Source: Eurostat, Directorate-General for Energy and Transport.

The EU-27 motorisation rate grew at 2.7 % per year on average during the decade 1990-2000 and at 1.5 % per year on average since then. The equivalent figures for the EU-15 are 0.5 points lower at 2.2 % and 1 %. The higher growth rates for the EU-27 are a result of low initial car ownership in the central and eastern European countries and their transition to market economies during the 1990s with associated rise in incomes. Growth in the EU-27 and the EU-15 has slowed down in recent years, which may partly reflect a fall in the growth rate of per capita GDP, and rising congestion problems. The growth in passenger cars can be linked to the growth in energy consumption by road in the sustainable transport chapter.

### Analysis



## Production patterns

## Environmental management systems

**Definition:** This indicator is defined as the **number of EMAS-registered organisations and sites** (see methodological notes).

The EMAS (eco-management and audit scheme) <sup>(131)</sup> is a voluntarily 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. The scheme integrates ISO 14001 (international standard for environmental management system) <sup>(132)</sup> as its environmental management system element.



<sup>(131)</sup> Regulated under Council Regulation (EEC) No 1836/93 of as amended by Regulation (EC) No 761/2001.

<sup>(132)</sup> See <http://www.iso.org/iso/en/iso9000-14000/index.html>

## Indicator relevance

EMAS is an important corporate social responsibility (CSR) instrument, aimed at boosting the environmental performance of European companies. In the same way as consumers are expressing growing interest for 'green' products and services (see eco-label indicator) and for information about the conditions in which the goods and services they are consuming have been produced, businesses are showing greater involvement in favour of sustainable development as they feel that socially responsible management can contribute to improve their competitiveness.

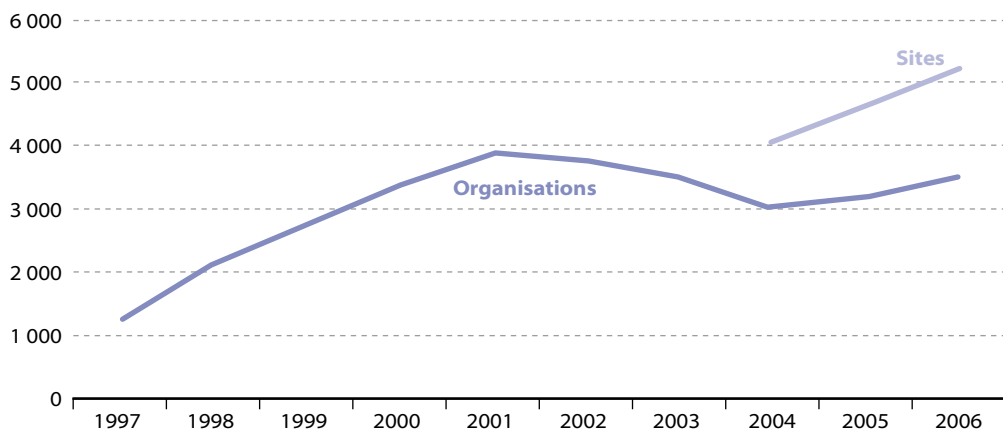
<sup>(133)</sup> Corporate social responsibility: A business contribution to sustainable development, COM(2002) 347.

<sup>(134)</sup> Implementing the partnership for growth and jobs: Making Europe a pole of excellence on CSR, COM(2006)136.

Following public consultation, the European Commission set up its own strategy on CSR <sup>(133)</sup> in 2002. In 2006, the strategy was reinforced <sup>(134)</sup> to give rise to a European alliance for corporate social responsibility which is an open alliance of European enterprises to further promote and encourage CSR. In accordance with the alliance, the renewed sustainable development strategy has asked for increased 'awareness and knowledge of corporate social and environmental responsibility and accountability' and regards the involvement of businesses and social partners as a policy guiding principle to enhance 'the social dialogue, CSR and private-public partnerships' in order 'to foster cooperation and common responsibilities to achieve sustainable consumption and production'.

**Figure 4.15: EU-15 EMAS registrations (number)**

Source: European Commission, Directorate-General for the Environment.



## Analysis

Since the beginning of the scheme in 1995, the number of EMAS registered organisations experienced a continuous upward trend in the EU-15. From 2000 to 2006, registrations grew from 3 358 to 3 469 organisations, representing an annual average growth rate of 0.5 %. The



years 2002 and 2003 showed a declining trend, down to 3 068 registrations, partly ascribable to the retreat of German companies, which had been both EMAS- and ISO 14001-certified, to only keep the latter standard. Since April 2001, corporate registrations are possible, wherein organisations gather all their sites under one registration number, which has also contributed to the decline in the number of organisations in the following few years. The Commission started to collect numbers of sites in addition to number of organisations in March 2004 to give a more accurate picture of EMAS development. The increase in terms of number of sites is indeed much higher, reaching 5 156 sites in the EU-15 in 2006, with an average rate of 7.4 % growth since 2000 <sup>(135)</sup>. EMAS is undergoing a real success in most countries, in particular in Spain and Italy which have offset the German decline (see country breakdown on the SDI website). In the EU-27, there were 5 198 sites registered in 2006. Compared to the EU-15 figure, it illustrates that the development of EMAS in the Member States from the latest two enlargements is still in an early phase, with the creation of institutional networks and/or national promotion initiatives mainly, and some certifications in seven of them, in particular the Czech Republic (22 sites) and Hungary (11 sites).

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<sup>(135)</sup> In 2000, corporate registrations were not possible, and the number of sites was therefore the same as the number of organisations.



## Production patterns

**Definition:** This indicator is defined as the **number of eco-label or 'EU flower' awards** in EU Member States, by product group (see categories in methodological notes). The EU eco-label is awarded to products (not including food and medicine) of high quality, showing compliance with specific criteria, after verification by an independent third party.

## Eco-labels



### Indicator relevance

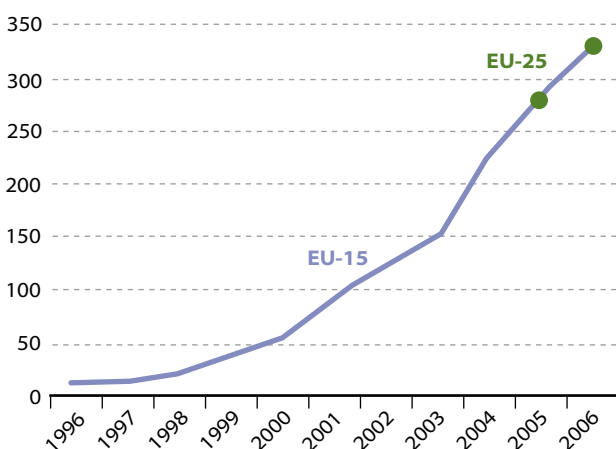
<sup>(136)</sup> As laid down by Council Regulation (EEC) No 880/92 on a Community eco-label award scheme applicable to products at a Community or a national level, as amended by Regulation (EC) No 1980/2000 of the European Parliament and of the Council on a revised Community eco-label award scheme.

<sup>(137)</sup> The EU energy labelling scheme requires manufacturers and retailers to display energy efficiency ratings (class A for best, G for worst) for certain household appliances (e.g. refrigerators and washing machines).

The indicator tracks the success of the EU eco-label <sup>(136)</sup>, which, together with environmental management schemes (see previous indicator), is a corporate social responsibility tool, contributing to sustainable development at both business and consumer level, encouraging the supply of products and services with reduced impact on the environment by providing consumers with information on the consequences of their consumption choices and behaviour, and thus enhancing demand for, and use of environmentally sounder products. Consumer information is closely linked to product policies which aim to reduce negative environmental effects through extending product life and optimising product design for durability, reuse, and recycling.

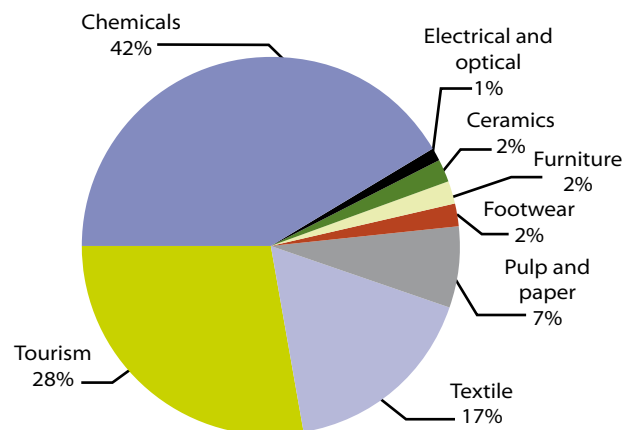
Many Member States have developed effective eco-labelling schemes such as the German Blue Angel scheme, all of which are operating alongside the EU scheme. Current legislation <sup>(137)</sup> is imposing some labelling constraints on European producers and retailers but this concerns electric equipment mainly (see household electricity consumption indicator). In order to better inform and protect consumers, the renewed sustainable development strategy is asking the Commission to 'propose extending performance labelling schemes from electrical appliances and cars to other groups of environmentally harmful products including products with high environmental impacts' and has set the objective of 'further improving food and feed legislation, including review of food labelling' to promote sustainable production and consumption and enhance public health.

Figure 4.16: Flower awards (total number)



Source: European Commission, Directorate-General for the Environment.

Figure 4.17: EU-25 flower awards, by category (April 2007)





The uptake of eco-labelled products has been growing steadily, from six awards in 1996 to 326 in 2006. The annual average growth of 70 % (corresponding to an overall 720 % increase) experienced between 1996 and 2000 has slowed down to 37 % per year (465 % overall) between 2000 and 2006. The scheme was only introduced recently in the 2004 enlargement Member States where it is undergoing a modest start, with three awards in 2005, and 12 in 2006 (see country breakdown on the SDI website).

Some 28 product groups are currently available. The 'chemicals' category is the most important, with 45 % of the total, and includes paints, varnishes and lubricants, which do not contain certain toxic or hazardous substances and have a reduced impact on the aquatic environment, air and/or the soil during use. The second most important product group is 'textile' (24 %) with products such as clothing, bedlinen and other indoor textiles which again, have been manufactured using a limited quantity of harmful substances, and present a reduced risk of allergic reactions. The more recent 'tourist' category (15 %), which has undergone a rapid growth, consists of accommodation services which limit energy and water consumption while reducing waste production and favouring the use of renewable resources and less hazardous substances. Award criteria are constantly revised, as in the example of footwear, for which criteria have been revised so that eco-labelled shoes no longer have traces of arsenic, cadmium or lead.

## Analysis



## Production patterns

## Area under agri-environmental commitment

**Definition:** This indicator monitors trends in **agricultural land enrolled in agri-environmental measures as the share of total utilised agricultural area (UAA)**. For the EU-15, the data include agri-environmental contracts under Regulation (EC) 2078/1992 and contracts signed in 2000-2005 under the Regulation (EC) 1257/1999. For countries from the 2004 enlargement, agri-environmental contracts under Regulation (EC) 1257/1999 started from their accession to the EU (see methodological notes).



### Indicator relevance

Since the 1999 CAP reform, agri-environment programmes are the only obligatory measure that Member States must include in their rural development programmes and are 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 good farming practice (GFP). Codes of GFP are defined by Member States in rural development programmes to provide a minimum environmental baseline to minimise some of the potential negative environmental effects of the agricultural activity and to ensure that agri-environmental measures (AEMs) 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.

AEMs are currently the main instrument 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 EU biodiversity action plan for agriculture (138), in the nitrates directive (139), 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'.

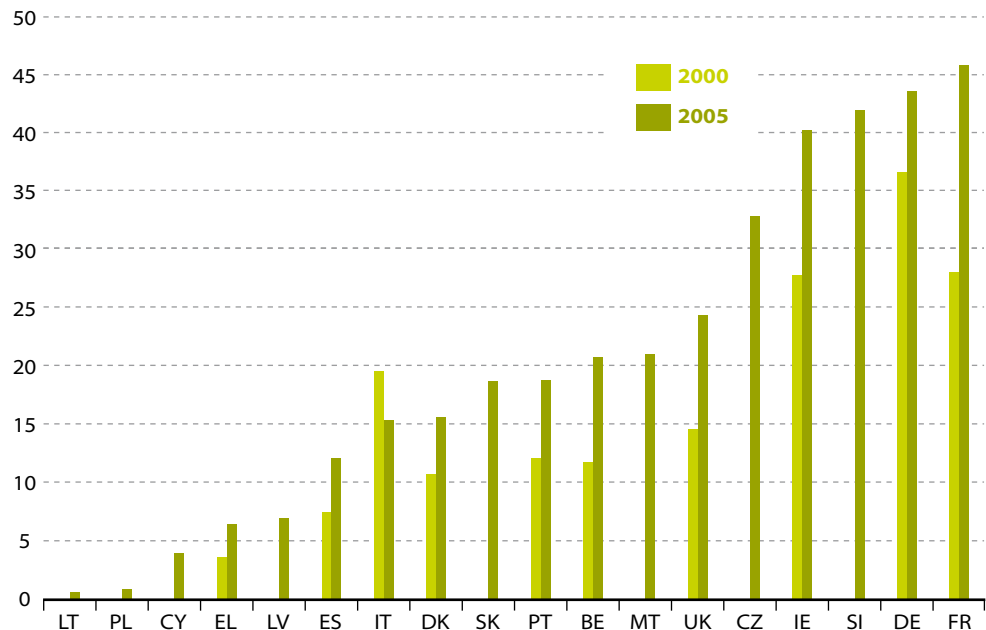
<sup>(138)</sup> Biodiversity action plan for agriculture, COM(2001) 162.

<sup>(139)</sup> Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources.

**Figure 4.18:** Share of utilised agricultural area enrolled in agri-environment measures (%)

*NB:* Data not available for EE, LU, HU, NL, AT, FI and SE. Scheme starting in 2004 for 10 new Member States. 2005 figure for FR refers to 2004.

*Source:* European Commission, Directorate-General for Agriculture and Rural Development.







Agri-environmental support is the only compulsory scheme of the rural development policy, which has helped ensure a wide application throughout the EU. Nevertheless, the uptake of agri-environmental measures is uneven across the EU. In 2005, the share of agri-environmental schemes in total agricultural area varied considerably across Member States. Amongst countries for which data were available, the larger shares were found in France, Germany, Slovenia and Ireland (more than 40 %), in contrast to countries such as Lithuania, Poland and Cyprus (with less than 5 %), bearing in mind that the scheme started only in 2004 for the 10 new Member States.

In countries for which comparison between 2001 and 2005 is possible, the share of agricultural land enrolled in agri-environmental schemes increased by more than 60% in Greece, Belgium, UK, France, and Spain. The current data availability does not allow an evaluation of progress at EU level.

There is also a concern that the distribution of area under agri-environmental commitment across EU-15 Member states does not target sufficiently areas of potential environmental concern <sup>(140)</sup>.

## Analysis

<sup>(140)</sup> Integration of environment into EU agriculture policy — the IRENA indicator-based assessment report, EEA report 2/2006.



## Production patterns

## Organic farming

**Definition:** The 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 farming is a method of production, which puts the highest emphasis on environmental protection and, with regard to livestock production, animal welfare considerations. It avoids or largely reduces the use of synthetic chemical inputs such as fertilisers, pesticides, additives and medical products. Farming is only considered to be organic at the EU level if it complies with Council Regulation (EEC) No 2092/91 and its amendments<sup>(141)</sup> which have set up a comprehensive framework for the organic production of crops and livestock and for the labelling, processing and marketing of organic products, while also governing imports of organic products into the EU.



<sup>(141)</sup> Council Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs and Council Regulation (EC) No 1804/1999 supplementing Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock.

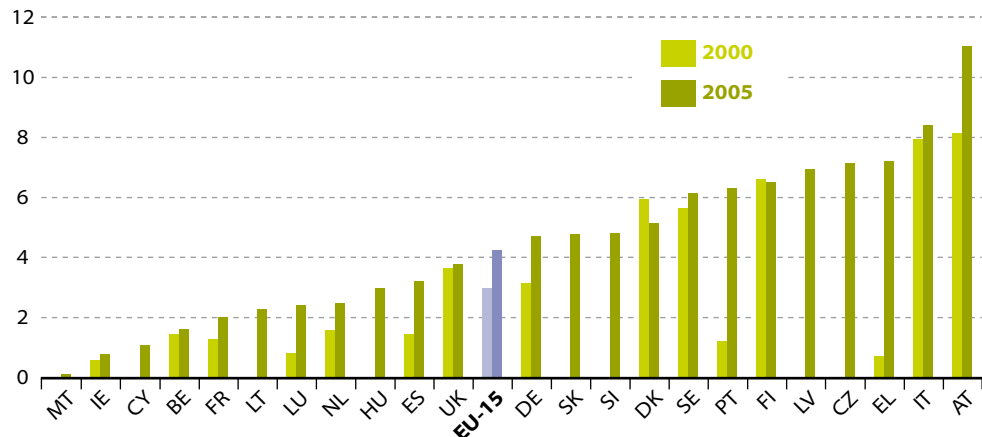
## Indicator relevance

Increased consumer awareness of food safety issues and environmental concerns have contributed to the growth in the demand for organic products over the last few years. The renewed sustainable development strategy encourages Member States to 'support information campaigns with retailers and other organisations to promote sustainable products, inter alia, products that stem from organic farming as well as environmentally sound products', within the framework of the key challenge 'sustainable consumption and production'. Moreover, under 'conservation and management of natural resources', the strategy is calling 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'.

<sup>(142)</sup> European action plan for organic food and farming, COM(2004) 415.

In 2004, the Commission presented a 'European action plan for organic food and farming'<sup>(142)</sup> to further promote this farming system. The action plan sets out 21 actions in the areas of the organic food market, public policy and standards and inspection, but does not set any specific targets in relation to the area or number of farmers. However, a number of EU Member States have adopted targets for area under organic farming, ranging mainly from 10 to 20 % to be reached by 2010 or before. Area-based payments for organic farming were originally granted through the agri-environment schemes under Council Regulation (EEC) No 2078/92, continued under Council Regulation (EC) No 1257/1999 regarding support for rural development in the 2000-2006 programming period. This support will continue in the 2007-2013 period, under Council Regulation (EC) No 1698/2005.

**Figure 4.19: Share of area occupied by organic farming in total utilised agricultural area (%)**



*NB:* The accuracy of data varies between countries. The 2005 figure for LU is an estimate based on the 2004 figure for organic areas.

Source: Eurostat.



The organic farming sector is estimated to have rapidly grown in the EU-15 from slightly more than 0.5 % of utilised agricultural area in 1993 to about 3 % in 2000, i.e. an increase of more than 25 percentage points per year <sup>(143)</sup>.

From 2000 to 2005, this growth carried on at a slower but steady rate, from 3 % to 4.3 %, which represents a growth of 7.3 percentage points per year on average in the EU-15. The largest increases have occurred in Greece and Portugal, where the share of organic area increased by 57.6 and 38.5 points respectively in five years. This rapid growth puts Greece in the third place in terms of the largest share of organic farming with 7.2 % of agricultural area in 2005, behind Italy (8.4 %) and Austria (11 %). At the opposite end, Ireland had the smallest share (0.8 %). Amongst the countries from the 2004 accession, the largest shares were found in Latvia and the Czech Republic, with respectively 7 % and 7.2 % of agricultural area.

## Analysis

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<sup>(143)</sup> Organic farming in the European Union, facts and figures. Report by the Directorate-General for Agriculture and Rural Development, 2005.



## Production patterns

## Livestock density index

**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 facilitates the aggregation of livestock from various species and ages through the use of LSU coefficients, which are established by convention. The livestock species aggregated in the LSU total, for the purpose of this indicator, are: equidae, cattle, sheep, goats, pigs, poultry and rabbits. The LSU being a theoretical unit, its limits should be taken into account in the interpretation of the index (see methodological notes).



## Indicator relevance

<sup>(144)</sup> Directive 2001/81/EC of the European Parliament and of the Council on national emission ceilings for certain atmospheric pollutants.

<sup>(145)</sup> Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

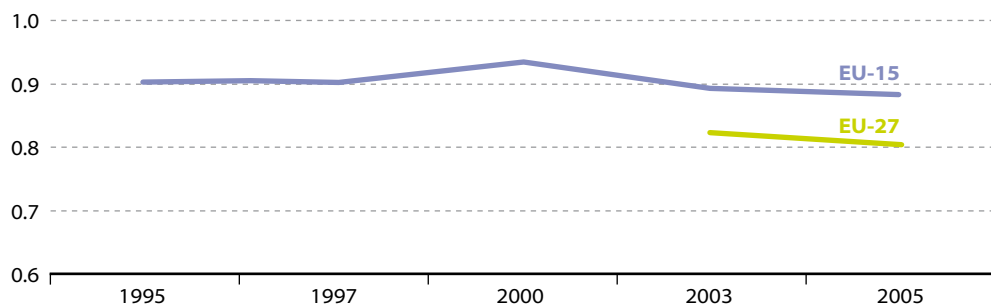
<sup>(146)</sup> Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources.

The renewed sustainable development strategy calls for 'further efforts through the new programmes for rural development and the new legislative frameworks for organic farming and animal welfare'. This indicator is used as a 'proxy' of agricultural intensification. Intensification is a process that has characterised European agriculture for several decades. While leading to increased yields and often bringing about a more efficient utilisation of inputs, it is nevertheless expected to result in negative externalities to the environment. Intensive livestock rearing, especially pig and poultry production, is a main source of farmyard manure, a key component of potential nutrient surpluses, with associated environmental impacts on aquatic systems. On the contrary, the extensification of livestock can be expected to have positive effects on water quality, soil quality, biodiversity, and landscape preservation and the extensive management of grasslands is thus an important goal of EU agri-environment policies (see 'area under agri-environmental commitments' and 'area under organic farming').

The number of cattle and other livestock also has a significant influence on greenhouse gas and other emissions from agriculture and thus impacts on the potential of the EU to reach important environmental policy goals under the Kyoto Protocol, the national emissions ceilings <sup>(144)</sup>, water framework <sup>(145)</sup> and nitrates <sup>(146)</sup> directives.

**Figure 4.20:**  
Livestock density index (LSU per hectare)

Source: Eurostat.



## Analysis

Between 1995 and 2000, the EU-15 livestock density index grew from 0.90 to 0.93 LSU, corresponding to an annual growth rate of 0.7 %. As from 2000, the trend was inverted and the index declined on average by 1.1 % per annum, to 0.88 LSU in 2005. The EU average masks large differences at country level, with values ranging from 0.3 LSU in Latvia to 4.5 LSU in Malta. Important regional differences also exist, in particular in large countries, which can be affected by both abandoned areas and hot spots. Moreover, if it is recognised that many of the low-input regions are dominated by grazing livestock farms (either cattle or sheep), trends by farm type may nonetheless reveal unsustainable patterns, affecting high nature value farmland negatively, which the current indicator cannot highlight due to data limitations.



## Methodological notes

### Resource productivity

Direct (used) material inputs are defined as all solid, liquid and gaseous materials <sup>(147)</sup> that enter the economy for further use in production and consumption processes. 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).

Imports are classified according to their level of manufacturing into:

- raw materials
- semi-manufactured products
- finished products
- other products (mostly products of the nutrition industry)
- packaging material imported with products
- waste imported for final treatment and disposal.

At EU level, imports may be classified based on either the combined nomenclature (CN — the classification of foreign trade) or the more aggregated classification of products by activities (CPA). Each category of imports is further classified according to the basic material components of the commodities:

- fossil fuels (further subdivided by type of fuel);
- minerals (further subdivided by metals and non-metallic minerals);
- biomass (from agriculture, forestry, fishing or hunting).

A detailed proposal for classifying products by main material component based on the commodities classifications of foreign trade statistics is included in the Eurostat methodological guide on material flow accounts <sup>(148)</sup>. The more complex the material mix of a manufactured product, the more critical its attribution to a 'dominant' material category, and conversion tables may need to be set up for the detailed attribution of imports to material categories.

Exports are classified in the same way as imports. This allows to account for DMC per category of materials.

For calculating resource productivity, the figures for GDP were from Newcronos for years available (at 1995 prices and exchange rates). For earlier years, GDP data from Newcronos have been reinterpolated from the first available ESA 95 data, using annual GDP volume growth rates.

### Municipal waste generation and treatment

Waste statistics are collected from all European countries through the 'waste' section of the joint Eurostat/OECD questionnaire. It is generally recognised that differences in methods of data production among countries plus the variances in interpretation of definitions and/or waste categories make comparison of data among countries rather difficult.

Municipal waste is classified according to the following main categories: paper, paperboard and paper products, plastics, glass, metals, food waste, garden and similar materials, and other similar waste.

Landfill is defined as the depositing of waste into or onto land, including specially engineered landfill, and temporary storage of over one year on permanent sites. The definition covers both landfill in internal sites (i.e. where a generator of waste is carrying out its own waste disposal at the place of generation) and in external sites.

Incineration means thermal treatment of waste in an incineration plant as defined in Article 3(4) or a co-incineration plant as defined in Article 3(5) of the directive on the incineration of waste (Directive 2000/76/EC of 4 December 2000).

These indicators should be interpreted with care due to data limitations including the absence of a harmonised definition of 'waste' and 'non-waste'. Moreover, only volumes are monitored while the nature and composition of the waste concerned should be considered also.

The data collection based on the joint OECD/Eurostat questionnaire will be replaced by the mandatory data collection under the waste statistics regulation <sup>(149)</sup> from 2006 onwards. It is expected, when fully implemented, to significantly improve data availability and comparability on waste generation and treatment.

### Emissions of acidifying substances, ozone precursors and particulate precursors

In the concept of acid equivalents, weighting factors are used to aggregate the emissions of acidifying substances and present a single figure for this in acid equivalents. They represent a simplified approach to a very complex process

<sup>(147)</sup> Water and air consumption are, apart from the water content of materials, not included. Quantitatively important 'memorandum items' for balancing air and water should be included in the input. For example, air is used during the fuel combustion process.

<sup>(148)</sup> European Union, 2001, *Economy-wide material flow accounts and derived indicators — A methodological guide*, 2000 edition, Eurostat theme 2, economy and finance.

<sup>(149)</sup> Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics.



of chemical interactivity. Acid equivalents are estimated as follows: sulphur dioxide \* 1/32; nitrogen oxides \* 1/46 and ammonia \* 1/17<sup>(150)</sup>.

The emissions of ozone precursors can be aggregated using their ozone forming potential and can be expressed in volatile organic compounds without methane (NMVOC) equivalents. The following weighting factors are applied to estimate the emissions in NMVOC equivalents: nitrogen oxides=1.22, volatile organic compounds without methane=1, carbon monoxide=0.11, methane=0.014 (de Leeuw 2002).

The total particulate-forming potential is calculated as the sum of primary (direct emissions) and secondary (formation by reactions in the atmosphere) aerosols. The emissions are aggregated into PM10 equivalents using the following weighting factors: PM10=1, sulphur oxides=0.54, nitrogen oxides =0.88, ammonia=0.64.

The conversion in terms of equivalents for the gases above represents an oversimplified approach to a very complex process of chemical interactivity.

The 'total' includes all emissions without any disaggregating. The sector 'energy (excluding transport)' corresponds to the whole energy sector without transport; The 'other' category includes the sectors industrial processes, waste, other (non energy), and 'not allocated'.

Data are derived from the EEA core set of indicators (see Box 5.3), which includes indicators CSI 001 (emissions of acidifying substances), CSI 002 (emissions of ozone precursors), and CSI 003 (emissions of primary particles and secondary particulate precursors).

#### Number of households

The data come from the European labour force survey (LFS, see Box 1.4 in the socioeconomic development chapter), a quarterly household sample survey carried out in the Member States of the European Union, candidate countries and EFTA countries. The LFS provides population estimates for the main labour market characteristics, as well as important socio-demographic characteristics, such as sex, age, education, households and regions of residence.

The survey's target populations are all persons in private households aged 15 years or older.

Since all the data are expressed in absolute values for each quarter (i.e. number of persons) no weighting is used. Any missing national accounts quarters at the end of the series are estimated by applying a growth factor usually derived from the LFS (or administrative data for Luxembourg).

The data presented are estimates made by Eurostat. The LFS is based upon a sample of the population. The results are therefore subject to the usual types of errors associated with random sampling.

#### Household expenditure

Consumption expenditure data are collected in the context of the household budget surveys. There is no legal basis, hence each country has its own targets, methodology and

survey programming. Data supplied by each country are not perfectly harmonised. After each round, some harmonisation efforts have been carried out and each new round of data collection is better harmonised than the previous one. However, some problems of comparability among countries still remain. Generally speaking, more recent data are better harmonised than old data.

Consumption expenditure on classification of individual consumption by purpose 1999 (Coicop) headings linked to activities that might be considered as non-socially correct (e.g. consumption of alcoholic beverages, narcotics or prostitution) used to be under-reported by the surveyed households, and hence these figures are not reliable.

The main purpose of this statistic at national level is to update the weights of the bucket of goods and services used for the calculation of the HICP. However it may also be used for many other purposes either at national or European level: economic studies, social analyses, market research, etc.

Household final consumption expenditure is measured in national currencies, euro and pps (purchasing power standard)

#### Final energy consumption and electricity consumption by households

The data come from Eurostat energy statistics.

Energy statistics are collected through standardised questionnaires: five annual questionnaires (joint Eurostat/IEA/UNECE questionnaires) and six monthly questionnaires (four Eurostat questionnaires and two questionnaires common with other international organisations).

Final energy consumption is the sum of the energy consumed by the following final users.

- Industry: covering consumption in all industrial sectors with the exception of the 'energy sector'. The quantities of fuel transformed in industry's own electrical power stations and the quantities of coal transformed into coke, and coke transformed into blast-furnace gas are not part of the overall industrial consumption but of the transformation sector.
- Transport: covering consumption in all types of transport, i.e., rail, road, air transport and inland navigation. Fuel supplied to international marine bunkers is considered to be similar to an export and is therefore not included under transport.
- Households, services and others: covering quantities consumed by private households, commerce, public administration, services, agriculture and fisheries.

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

<sup>(150)</sup> De Leeuw, 2002: A set of emission indicators for long-range transboundary air pollution. Environmental Science & Policy, 5, 135-145.



and distribution losses. It is calculated as the sum of final electricity consumption from all sectors. These are disaggregated to cover industry, transport, households, services (including agriculture and other sectors).

Prices of electricity and natural gas charged to industrial end-users are collected under Council Directive 90/377/EEC establishing a community procedure to improve the transparency of energy prices. The data collection has been extended on a gentlemen's agreement basis to cover also households. The final price charged to electricity customers will depend on the structure of electricity tariffs and contracts which normally contain a number of factors, including fixed charges and unit prices that vary according to the amount of electricity and the time of day it is consumed. Electricity prices charged to final domestic consumers are defined as follows: annual consumption of 3 500 kWh of which 1 300 kWh is overnight (standard dwelling of 90 m<sup>2</sup>). Prices are given in euro (without taxes) per kWh corresponding to prices applicable on 1 January of each year.

### Food consumption

The indicator is based on data provided by the supply balance sheets of agricultural products: balance item 70 (gross human consumption) and the supply balance sheets for fishery products (*source*: FAO).

Human consumption refers to the quantities of products made available for human consumption in all forms: quantities consumed without further processing and quantities supplied by the distributive trades and the food industry.

Apparent human consumption per capita is obtained by dividing human consumption by the number of inhabitants (resident population stated in official statistics as at 1 January) Persons normally residing in a country but temporarily absent are included in the total population figure, while foreigners residing temporarily in the country are excluded for the same reasons

- Gross human apparent consumption is obtained as follows.
- Apparent consumption = (commercial production + estimated own account production for self-consumption + import + opening stocks) - (exports + usage input for processed food + feed + non-food usage + wastage + closing stocks).
- The degree of self-sufficiency of a given region indicates up to which extent 'domestic production' (from a domestic raw material) of this region is in a position to cover all the needs or 'domestic use' (total use for humans, animals and industry) of this region.
- More information can be obtained at: [http://europa.eu.int/estatref/info/sdds/en/food/food\\_ch\\_cons\\_base.htm](http://europa.eu.int/estatref/info/sdds/en/food/food_ch_cons_base.htm)

### Motorisation rate

The stock of road vehicles is the number of road vehicles registered at a given date in a country and licensed to use roads open to public traffic. This includes road vehicles

exempted from annual taxes or licence fees; it also includes imported second-hand vehicles and other road vehicles according to national practices. The statistics should exclude military vehicles.

Surveys for passenger cars are not harmonised at the EU level. There are still some problems of definitions applied differently, mainly on the distinction between a lorry and a passenger car (i.e. vans, pick-ups, etc.). Therefore some caution is advised in comparing across countries.

### Environmental management systems

The data come from the European Commission EMAS helpdesk <sup>(151)</sup> and are a compilation of the national EMAS registers held by the EMAS competent bodies. Competent bodies communicate on a regular basis changes, additions and deletions in their registers to the EMAS helpdesk, which is responsible for maintaining the EU register.

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 new 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.

The figures presented for the years 1995-1999 actually refer to the situation as at 1 January 1996-2000 while for the following years the data refer to the situation in December.

More information is available at: [http://ec.europa.eu/environment/emas/index\\_en.htm](http://ec.europa.eu/environment/emas/index_en.htm)

### Eco-labels

The figures come from the European Commission eco-label helpdesk, managed by the Directorate-General for the Environment. The Community eco-label is administered by the European Eco-labelling Board (EUEB) and receives the support of the European Commission, all EU Member States and the European Economic Area except Liechtenstein. The Eco-labelling Board includes representatives such as industry, environment protection groups and consumer organisations.

The scheme has been in operation since 1993 and currently encompasses the following 28 product groups:

- cleaning products: all purpose cleaners and cleaners for sanitary facilities, detergents for dishwashers, hand-dishwashing detergents, laundry detergents, soaps and shampoos (criteria under development);
- appliances: dishwashers, heat pumps (criteria under development), light bulbs, personal computers, portable computers, refrigerators, televisions, vacuum cleaners, washing machines ;
- paper products: copying and graphic paper, printed paper (criteria under development); tissue paper (criteria under revision);

<sup>(151)</sup> Which is managed by the Directorate-General for the Environment and operated by the Federal Environment Agency of Austria together with their partners Blue 4 You and Eco-conseil.



- home and garden: bed mattresses (criteria under revision), wooden furniture (criteria under development), hard and soft floor coverings (criteria under revision), indoor paints and varnishes (criteria under revision), soil improvers and growing media, textile products (criteria under revision);
- clothing: footwear, textile products (criteria under revision);
- tourism: campsite service, tourist accommodation service ;
- lubricants: lubricants.

Criteria for a product group are normally established for a period of three years, allowing for technical improvements and changes in the market to be reflected when criteria are revised.

For the purpose of this indicator, products have been classified using categories derived from the EU statistical classification of products by activity (CPA): chemical products (paints and varnishes, all-purpose and sanitary cleaners, soil improvers, dishwashing and laundry detergents); textiles; footwear; paper and paperboard (tissue paper, copying paper); electrical and optical equipment (dishwashers, washing machines, refrigerators, vacuum cleaners, computers, televisions, light bulbs); hotel and restaurant services (tourist accommodation services); ceramic tiles; furniture and other manufactured goods (furniture, bed mattresses).

Data presented in the graph on temporal evolution refer to September of each year, except for 2004 (December) and 2005 (November).

#### Area under agri-environmental commitment

The data on area under agri-environmental commitment come from the common indicators for monitoring of implementation of rural development plans (RDPS), (Council Regulation (EC) No 1257/1999 on support for rural development from the EAGGF), the Directorate-General for Agriculture and Rural Development, 2000 to 2005. Note the 10 new Member States' rural development programmes only started in May 2004, with their accession to the European Union. Before that date, Malta and Cyprus excepted, they were covered by the special accession programme for agriculture and rural development (Sapard), under which the agri-environmental measures were not compulsory.

The tables of monitoring of rural development programmes record individual agri-environment agreements and the area covered by them. If a single beneficiary and holding has more than one agreement covering the same area (e.g. an agreement on organic farming and a separate agreement regarding landscape conservation features) there is a risk of double-counting. As much as possible, these data have been checked to avoid double counting, but some further improvements are foreseen.

According to Regulation (EC) No 1257/1999, the main environmentally favourable measures supported are the following:

- ways of using agricultural land which are compatible with the protection and enhancement of the environment, landscape, natural resources, soil, water and genetic diversity,
- extensification of farming and management of low-intensity pasture systems,
- conservation of high nature-value farmed environments under threat,
- upkeep of the landscape and historical features on agricultural land,
- use of environmental planning in farming.

A substantial effort is needed to improve data collection and, in particular the spatial distribution of different agri-environment schemes, to allow monitoring and evaluation of the environmental targeting and outcome of agri-environment schemes. Efforts are currently undertaken to improve both the quality of data concerning the 2000-2006 programming period, and data collection over the 2007-2013 programming period.

Data on total utilised agricultural area (UAA) are extracted from the farm structure survey (FSS). The FSS does not cover common land, and a certain number of smallholdings are excluded from the survey as they fall under the threshold. For some Member States, this can lead to an overestimation of the percentage of UAA under agri-environmental commitment.

This indicator is also part of the EU agri-environmental indicator set (Box 4.2).

#### Box 4.2: EU agri-environmental indicators

In 2005, the Commission adopted a communication <sup>(152)</sup> which reports on the work undertaken with regard to the development of indicators for monitoring the integration of environmental concerns into the common agricultural policy (CAP). It describes the political context for the development of agri-environmental indicators, analyses the need to develop such indicators in relation to the ongoing process of reforming the CAP, reviews the progress made with their

development, and identifies key challenges and actions for future work. It proposes a consolidated agri-environmental indicator set, building on the output of the IRENA operation, which aimed to develop and compile, for the EU-15, the set of 35 agri-environmental indicators identified in previous Commission communications <sup>(153)</sup>, at the appropriate geographical levels and, as far as possible, on the basis of existing data sources.

<sup>(152)</sup> Development of agri-environmental indicators for monitoring the integration of environmental concerns into the common agricultural policy, COM(2006) 508.

<sup>(153)</sup> Indicators for the integration of environmental concerns into the Common Agricultural Policy, COM(2000) 20; Statistical information needed for indicators to monitor the integration of environmental concerns into the Common Agricultural Policy, COM(2001) 144.





### Livestock density index

The indicator is based on data from the Eurofarm database. Livestock numbers are converted into livestock units using the following coefficients:

Equidae	0.8
Bovine animals	
– under one year old	0.4
– one year or over but under two years	
– male	0.7
– female	0.7
– two years old and over	
– male	1.0
– heifers	0.8
– dairy cows	1.0
– other cows	0.8
Sheep, all ages	0.1
Goats, all ages	0.1
Pigs	
– piglets having a live weight under 20 kg, per 100 head	2.7
– breeding sows weighting 50 kg and over	0.5
– other pigs	0.3
Poultry	
– broilers, per 100 head	0.7
– laying hens, per 100 head	1.4
– other poultry (ducks, turkeys, geese, guinea-fowl), per 100 head	3.0
Rabbits, breeding females, per 100 head	2.0

The LSU is a theoretical unit, 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. Farm types are defined as follows: low-input farms spend <EUR 80 per ha per year on fertilisers, crop protection and concentrated feedstuff, medium-input farms spend between EUR 80 and EUR 250 per ha per year on these inputs and high-input farms spend >EUR 250 per ha per year on such inputs.

This indicator is also part of the EU agri-environmental indicator set (Box 4.2).

### Organic farming

The data come from the farm structure survey (FSS), which collects data on organic farming at regular intervals and at regional level since the 2000 survey. The representativity of the intermediate surveys (2003, 2005 and 2007) for the organic farming variable is, however, not completely assured. The suggested indicator is the evolution in the share of the organic farming area (where possible divided into fully converted and in-conversion areas) based on the results from the Directorate-General for Agriculture and Rural Development organic farming questionnaire in the total UAA in the Member States.

The organic farming regulation obliges Member States to submit yearly information on the number of organic operators and the area under organic farming. The Member States should send yearly completed questionnaires to the Agriculture and Rural Development DG before 31 July of the following year. Since Member States in the early 1990s used varying formats when submitting organic data, the Directorate-General for Agriculture and Rural Development, in collaboration with Eurostat, drew up a questionnaire with harmonised tables and guidelines in order to facilitate comparison and aggregation at EU level. The present version of the yearly organic farming questionnaire asks for information on organic operators (producers, processors and importers), crop areas/yields and their economic activity (NACE) at national level. A recent revision of the questionnaire included tables on livestock production and products.

This indicator is also part of the set of EU agri-environmental indicators (see Box 4.2).



# Natural resources

# 5

## **Strategy objective:**

*'to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services'*



## Policy Background

Human development is based on the use of natural resources. Stocks of natural resources need to be managed carefully, with a view to guaranteeing their availability for the needs of future generations. Natural resources provide essential life support functions such as food and habitats, carbon and water storage, as well as essential raw materials. Although small negative changes in the quantity or quality of most stocks of natural resources pose little immediate threat, these changes should not damage the capacity of the environment to continue providing all essential ecosystem services. The millennium ecosystem assessment <sup>(154)</sup> underlined that pressure on the natural environment has already led to very significant losses in virtually all types of ecosystems and the services they offer to human society.

<sup>(154)</sup> *Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis.* Island Press, Washington, DC.

The Gothenburg Council had concluded in 2001 that, in order to achieve sustainable development, 'the relationship between economic growth, consumption of natural resources and the generation of waste must change', further emphasising that economic growth must be combined with the sustainable use of natural resources. The renewed sustainable development strategy in 2006 again highlighted the management of natural resources as an unsustainable trend. The overall objective is to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services.

Over the last 30 years the EU has built a comprehensive legislative framework for environmental protection and this process has been guided by strategic environmental action programmes. The sixth Community environment action programme (sixth EAP) establishes the Community framework for environment policy for the period 2002 to 2012. It represents the environmental dimension of the EU's sustainable development strategy and sets out environmental priorities with a particular focus on four issues: climate change; nature and biodiversity; health and the quality of life; and natural resources and waste. Seven thematic strategies have been developed as part of the implementation of the sixth EAP, relating to: soil protection, protection and conservation of the marine environment; sustainable use of pesticides; air pollution; urban environment; sustainable use of natural resources; the prevention and recycling of waste.

## Main changes







The headline indicators for this theme show that pressures on natural resources remain of concern: previous declining trends seem to be stabilising, but there are not yet any signs of clear recovery. For many indicators, assessment at EU level is not possible due to insufficient geographical or time coverage.

### Biodiversity loss is showing signs of stabilisation

The previous deterioration of the population of common birds has stabilised in more recent years. Trends were relatively stable from 2000 to 2005, with average annual rates of change of +0.5 % for the common birds index and -0.3 % for the farmland birds index.




Along with the birds directive, the habitats directive forms one of the two pillars of EU biodiversity legislation and the index of sufficiency shows the degree to which it has been implemented in terms of areas covered and numbers of species under protection. At EU-15 level, the index of sufficiency has steadily increased from 2003 to 2006, to reach 93 %, while the first assessment at EU-25 level resulted in an index of 82 %. In most bio-geographical regions, the index has reached at least 90 %, although the coverage of the larger boreal and continental regions is still insufficient.

**Table 5.1: Evaluation of changes in the natural resources theme (from 2000)** <sup>(155)</sup>

	EU
Common birds	 1
Fish catches	 2
<b>Biodiversity</b>	
Sufficiency of designated areas	 3
<b>Freshwater resources</b>	
Water abstraction	:
Waste water treatment	:
Biochemical oxygen demand in rivers	 4
<b>Marine ecosystems</b>	
Fishing fleet	 3
<b>Land use</b>	
Built-up areas	:
Forestry: increment and fellings	:
Defoliation	 5



**LEGEND:**

-  favourable change/ on target path
-  no or insufficient change
-  unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available

1. EU aggregate based on BE, CZ, DK, DE, IE, ES, FR, IT, LV, HU, NL, AT, PL, FI, SE, UK
2. North Atlantic Area (ICES)
3. EU-15
4. EU aggregate based on BE, BG, CZ, DK, FR, LV, LT, HU, AT, SI, SK & UK
5. EU-27

<sup>(155)</sup> For many indicators in this theme, the distinction between EU-27 and EU-15 is either irrelevant or not possible because of lack of aggregates. Adequate evaluation was not possible for forestry increment and fellings because of lack of data over time, or for water abstraction and built-up areas because of insufficient geographical coverage.

Fresh water in Europe is a precious natural resource that has been under pressure both in terms of quality and quantity. From 2000 to 2003, most of the Member States for which data are available appear to have reduced the pressure being exerted on water resources by reducing their abstraction of groundwater. The picture is less clear for surface water, with different trends across countries.

Since 2000, there has been further progress in the share of households connected to at least secondary treatment systems, in most Member States for which data are available. In a number of EU countries the proportion of the population connected to a waste water treatment system however still remains below 40 %.

Marking an improvement in the quality of surface water, the biochemical oxygen demand (BOD5) in rivers of 12 selected EU countries has, since 2000, continued to fall as it did during most of the 1990s.

A considerable proportion of fish catches in EU-managed waters is taken from stocks that are already below safe biological limits. This is particularly noticeable for stocks of highly valued species (white fish). Whilst the population of hake appears to have recovered, trends in demersal and benthic fish stocks, such as cod, plaice and sole, remain of special concern. The reform of the common fisheries policy introducing measures to reduce the fishing fleet has led to a

**Fresh-water resources: less pressure from groundwater abstraction, more widespread treatment and higher quality**

**Marine ecosystems: fish stocks continue to be depleted**



sharp decrease in the number of fishing vessels, although the decrease in tonnage, more closely linked to the fishing capacity, is taking place at a somewhat slower rate.

**Land use: built-up areas continue to increase; forest fellings are still sustainable**

The share of built-up areas continued to increase in most countries for which data are available, although there are some signs of stabilisation in a few countries.

Fellings of forest trees as a share of increment rose in the EU-15 during the 1990s, from 54 % to 63 %. Fellings continued to increase after 2000, although at a slower rate. Lack of recent data on increment impedes further adequate assessment up to 2005. It can be estimated that the ratio of fellings to increment is still around 60 %, therefore still sustainable.

The average defoliation rate in the EU-27 increased by slightly over 1 % a year on average between 2000 and 2006. This can, in part, be assigned to severe drought conditions during the summer of 2003. There were some signs of recovery in 2005 and 2006.

**Box 5.1: Objectives related to conservation and management of natural resources in the renewed 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.
- 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.

**Rationale for the selection of indicators**

Concerning conservation and management of natural resources, the overall objective of the reviewed sustainable development strategy is to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services. Its operational objectives and targets are presented in Box 5.1. They refer to the four United Nations global objectives on forests which are presented in Box 5.2. The indicators in this theme have been selected to measure progress towards these policy goals.

**Box 5.2: United Nations global objectives on forests**

The four 'global objectives' on forests aim :

- to reverse the loss of forest cover worldwide through sustainable forest management (SFM), including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation;
- to enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest-dependent people;
- to increase significantly the area of protected forests and other sustainably managed forests, and increase the proportion of forest products derived from sustainably managed forests and
- to reverse the decline in official development assistance for sustainable forest management and mobilise significantly-increased new and additional financial resources from all sources for the implementation of SFM.

Birds are a highly visible subset of biodiversity reacting quickly to changes in the food chain or habitats, and providing early signs of ecosystem change. The first headline indicator, the 'common bird index', integrates the population abundance and the diversity of a selection of common birds, as well as looking more specifically at farmland birds. It is envisaged in the future to enlarge the indicator to other habitats, including forest bird species and possibly other habitats in the longer term. A second headline indicator is 'fish catches taken from stocks outside safe biological limits'. It provides a direct measure of the level of pressure on fish populations that are at risk.

Further indicators are split into three subthemes, providing additional information on biodiversity related to species and protected areas, and addressing specific issues related to water, marine ecosystems, and land:

- **Biodiversity:** The 'sufficiency index of protected areas and species under the habitats directive' measures how close both EU-bio-geographical regions and Member States are to the target of having proposed sufficient sites under the habitats directive. To provide a complete picture of the extent to which the Natura 2000 network has been implemented, a complementary index of sufficiency for designations under the birds directive is required. An additional indicator measuring the rate at which species are slipping towards extinction, the 'red list index', based initially on bird species, is under development. In the longer term, an indicator on the 'change of status of species of European interest' could complement this subtheme, providing key information on policy responses, and the usefulness of a 'biodiversity index' looking at a wider range of species than birds is being explored.
- **Fresh-water resources:** Concerns for water resources cover both quantities available and quality. Quantitative issues are monitored by the use of 'total gross water abstraction from fresh surface- and groundwater'. Water quality is measured using an indicator of the population connected to 'urban waste water treatment with at least secondary treatment' and an indicator of the 'biochemical oxygen demand over five days (BOD5) in rivers of selected countries'. The development of other water quality indicators on the 'percentage of bodies with high or good ecological status' or the 'index of toxic chemical risk to aquatic environment', as well as more data on chemical oxygen demand could also complement the subtheme.
- **Marine ecosystems:** The only additional indicator currently available is on the 'size of fishing fleet', which aims to assess the pressure exerted on fish stocks. It is imperfectly correlated with fishing mortality, and the aim is to develop an indicator on 'effective fishing capacity and quotas, by specific fisheries'. An indicator measuring the 'concentration of mercury in fish and shellfish', to monitor the quality of the marine environment is under development. Other indicators to be developed include an indicator on 'seagrasses' to monitor the extent and health of a specific marine ecosystem, and a response indicator on 'structural support to fisheries, and percentage allocated to promote environmentally friendly fishing practices'.
- **Land-use:** An indicator on 'built-up areas' is currently used as a proxy for land use change, to be replaced in the future by an indicator on land-use change, by category. Two indicators are used to reflect both the management and the health of forests: 'forest increment and fellings' and 'forest trees damaged by defoliation'. An additional indicator on 'exceedance of critical loads of acidifying substances and nitrogen in sensitive natural areas' is under development to reflect an important pressure on soils. Additional indicators to be developed to complete this subtheme include the 'percentage of total land area at risk of soil erosion', and an indicator on 'deadwood', used as a proxy for biodiversity in forests, to replace the current indicator on defoliation.



## Potential linkages

### Linkages within natural resources

Biodiversity loss is linked to many of the issues covered in the subthemes on fresh-water resources, marine ecosystems and land use. Forests and water-related ecosystems contribute directly to biodiversity. Patterns of land use also influence biodiversity. Fragmentation of natural habitats is a key driver of biodiversity loss. Excessive groundwater abstraction lowers the water table and may reduce the water supply to forests and other plants, thus affecting habitats and biodiversity.

There are also links between freshwater resources and issues covered in the land use subtheme. Changes to the health and size of forests and wooded areas affect water reserves, as forests act as water catchment and management areas. The amounts of waste water generated intensify with increases in built-up areas. On the other hand, waste water collection from spatially more dispersed rural populations is more difficult than it is from highly urbanised populations. In comparison to other industries, waste produced by agriculture (e.g. fertilisers, insecticides, animal and primary-processing wastes) is more difficult to collect and treat.

Within the subtheme on fresh water resources, improvements in waste water treatment systems contribute to the quality of water-related ecosystems in many respects. Higher shares of households connected to water treatment systems and cleaner water make it more readily useable, taking pressure off groundwater resources.

### Linkages with the economic dimension

Consumption of natural resources has fuelled economic growth and underpinned improvements in living conditions for many European citizens. Their unsustainable use has however led to changes to many ecosystems that are having far-reaching implications. It is generally recognised that sustainable economic growth depends on the quantity and quality of the natural resources available. Natural ecosystems provide key services to society. For example, as well as timber, forests provide water catchment, filtration and flow-regulating functions.

Water is closely linked to economic development, especially at a regional level. It is an economic good used for agriculture and aquaculture, for the irrigation of crops and the rearing of livestock, as well as in industry, be it for cleaning or as an input into production processes and in electricity generation. Health, tourism, agriculture and fisheries are all sectors that can generally be expected to gain from cleaner water.

On the other hand, the increase in economic activity, the development of urban areas and the impact of growing transport networks are amongst the key drivers of biodiversity loss.

### Linkages with the social dimension and health

Differences in socioeconomic categories can lead to unequal access to natural resources.

Water is an essential social good that is used for drinking, cooking and hygiene, and it is therefore closely linked to public health. Water pollution can cause risks to health, for example through cases of eutrophication. Improving the cleanliness of surface water – measured by biochemical oxygen demand (BOD5) in rivers – has direct effects on human health where water is extracted for use by households, tourism and agriculture.

### Linkages with sustainable consumption and production

Changes in lifestyle, increased levels of consumption, and related increases in pollution and waste all influence biodiversity and the state of natural resources, as well as unsustainable production patterns. Corporate social responsibility, more environmentally friendly agricultural practices, and more sustainable consumption patterns are necessary to reduce the consumption of natural resources and improve the quality of the environment.

### Linkages with climate change and energy

Climate change adds to these direct anthropomorphic impacts on biodiversity, as for example changes in average temperatures and rainfall patterns may cause habitat loss or disruptions in



the food chain. Rising ocean temperatures, sudden climatic swings and changes in salinity, can add to the risk factors threatening fish stocks.

Climate change is expected to result in more frequent periods of drought which, together with changes in rain patterns, affect the rate of replenishment of groundwater reserves, with potential direct effects on human health. It induces increased water extraction for irrigation purposes, putting further pressure on reserves. As it affects temperature and rainfall patterns, climate change influences the availability and flow of water, as well as the populations of micro-organisms actively contributing (be it in a positive or in a negative way) to water cleanliness.

The rate at which forest trees grow depends on their health as well as on the availability of nutrients, water and sunshine, factors which may all be influenced by climate change. Climate change contributes to weakening trees' resistance (e.g. through droughts, storms and more parasites).

Ecosystems such as forests, oceans and wetlands also act as a sinks for greenhouse gases. Ecosystems such as coastal wetlands and floodplains can also be used in adaptation strategies against flooding and sea level rise.

Biodiversity is a common good, and contributions to multilateral environmental agreements have benefits both in developing countries and at the EU level. For example, as well as being influenced by environmental conditions in Europe, birds are also affected by conditions in the areas some of them migrate to annually. The strategy aims at contributing to a significant reduction in the worldwide rate of biodiversity loss, as well as contributing to achieving the four UN global objectives on forests. Fair trade and other labelling can contribute to sustainable management of natural resources in developing countries.

Policy coherence and effectiveness is important to ensure adequate conservation and management of natural resources. The renewed strategy advocates the use of economic instruments to reconcile environmental protection and smart economic growth. Openness is an important issue in good governance, and the strategy's policy guiding principle related to openness and democracy is enshrined in the Aarhus Convention, which guarantees the rights of access to information, public participation in decision-making and access to justice in environmental matters.

Linkages with  
global partnership

Linkages with  
good governance

#### Further reading on natural resources in Europe

*Communication from the Commission on the reform of the common fisheries policy -roadmap.* Luxembourg: Office for Official Publications of the European Communities, 2002

Halting the loss of biodiversity by 2010 — and beyond. Sustaining ecosystem services for human well-being, COM(2006) 216

Thematic strategy on the sustainable use of natural resources, COM(2005) 670

*Sustainable use and management of natural resources*, Report No 9/2005, European Environment Agency

Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe, Report No 11/2007, European Environment Agency

*State of Europe's forests 2003.* The MCPFE report on sustainable forest management in Europe <sup>(156)</sup>

EU forest action plan, COM(2006) 302

<sup>(156)</sup> 2007 report forthcoming.



## Headline indicator

## Common birds

**Definition:** This indicator is an aggregated **index integrating the population abundance and the diversity of a selection of bird species associated with specific habitats**. All are common bird species excluding rare species. Two groups of bird species are presented in this indicator: farmland specialists (33 species), and 'all common birds' species (123 species). Farmland birds use and have a high dependence on cultural land in the nesting season, and for feeding during most of the year. The 'all common birds' category regroups species from the 'farmland birds' groups with other common bird species.



## Indicator relevance

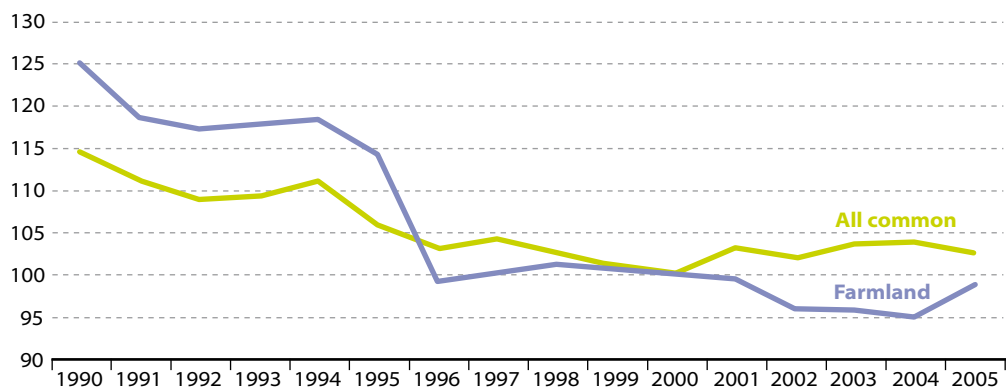
The renewed sustainable development strategy reiterated the aim of halting the loss of biodiversity, already explicit in the Gothenburg presidency conclusions, and also calls Member States to pay particular attention to the need for improved species protection and management policies. Birds are considered good proxies for biodiversity and the integrity of ecosystems as they tend to be at, or near, the top of the food chain, have large ranges and can migrate and thus reflect changes in ecosystems rather rapidly.

Although not encompassing the entirety of biodiversity across the EU, this indicator provides a measure of the state of a number of common species, as well as species within one broad category of ecosystem: farmland. When adequate data become available, the common bird indicators should in future cover other habitats. The indicator reflects the aggregate change in the populations of the selected species. An increase means that there are more species whose populations have increased than species whose populations have decreased: it does not necessarily mean that the overall population has increased.

**Figure 5.1:**  
Common bird index  
(index 2000=100)

NB: The EU aggregate figure is an estimate based on 16 Member States from EU-25.

Source: EBCC/RSPB/BirdLife/Statistics Netherlands.



## Analysis

Populations of wild birds fluctuate from year to year due to complex interactions with climate, other species and other environmental factors. These fluctuations mean that the emphasis should be placed on trends over a number of years rather than on changes from one year to the next. Keeping this in mind, the index of all common bird species fell steadily between 1990 and 2000, with an average annual decrease of 1.3 percentage points. This drop was even sharper for farmland birds, with a decrease of 2.2 percentage points per year on average. Between 2000 and 2005, a stabilisation of the index was registered, with rates of change of -0.3 percentage points per year for farmland birds, and +0.5 percentage points per year for common birds.

In analysing this indicator, it should be underlined that the methodology for calculating the farmland bird index has recently changed (see methodological notes). The new index presents a much sharper drop around the years 1995 and 1996. While the new index is recognised as integrating better expertise in terms of species selection, further investigation is necessary to explore what is behind this drop. In addition, the influence of both the inclusion of new species in the selection, and the starting year for monitoring schemes in some countries should be further investigated. In any case, the trend from 1996 onwards is consistent with the previous methodology and shows a fairly stable level of the index.



## Headline indicator



## Fish catches

**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**. In general terms, it is considered that a stock is within SBL if its current biomass is above the precautionary level advocated by the International Council for the Exploration of the Sea (ICES), which in essence ensures a high probability that the stock will be able to replenish itself. The sea areas considered cover the North-East Atlantic (North Sea and Baltic Sea, Bay of Biscay and the Iberian Peninsula), and exclude the Mediterranean Sea and the Black Sea.

The indicator is provided for the total catch as well as detailing four specific categories: benthic fish, which live permanently on the seabed and include skate and other flatfish; demersal fish, which live close to the sea bed and include cod and haddock; pelagic fish, which live in the open sea and include herring, mackerel, blue whiting and tuna; and industrial fish, which are used for reduction into fish meal and oil, and include sand eel, Norway pout and sprat.

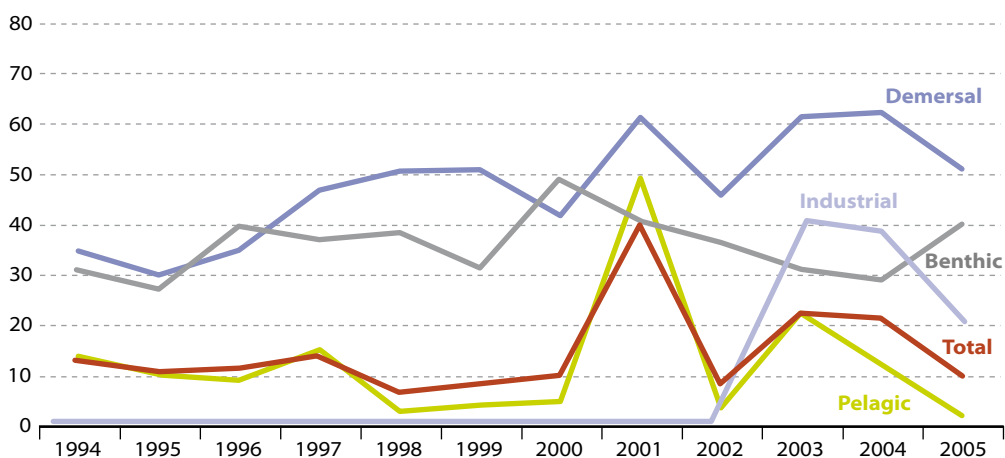


## Indicator relevance

The operational objectives of the reviewed SDS (2006) include improving management and avoiding overexploitation of renewable natural resources, including fisheries. The renewed common fisheries policy aims to maintain or restore stocks to levels that can produce the maximum sustainable yield in fisheries and especially to achieve these goals for depleted stocks on an urgent basis and where possible not later than 2015.

**Figure 5.2:**  
Proportion of fish catches taken from stocks outside safe biological limits (%)

Source: European Commission, Directorate-General for Fisheries and Maritime Affairs, ICES.



## Analysis

Prior to 2000, the proportion of the total catch from stocks outside safe biological limits fluctuated around 10 %. Deviations in 2001 and in 2003 were amplified by changes in the status of certain species whose catches are very high and therefore have a strong influence in the final figures. These are blue whiting (pelagic stock) in 2001, mackerel (pelagic) in 2003 and sandeel (industrial stock) in 2003. At the end of 2005, total catches taken from stocks outside safe biological limits had returned close to the 10 % level. However, about half of demersal and 40 % of benthic catches were still outside safe biological limits. Demersal stocks that were still particularly at risk were cod, whiting and deep-water fish, while hake stocks had apparently recovered. Stocks of benthic fish reached levels endangering their sustainability in the 1990s yet

there was noticeable improvement between 2000 and 2005. At the end of 2005, benthic species still caught outside safe biological limits were especially anglerfish, plaice, sole and nephrops. The situation for pelagic stocks seems to have improved, especially since 2003. For example, herring stocks have returned within safe biological limits in the North Sea and Baltic. Pelagic fish species that are still a cause for concern are mackerel (all NE Atlantic zones), herring (West of Scotland) and anchovy (Biscay). Among industrial species, especially sandeel and Norway pout stocks were outside safe biological limits at end-2005 <sup>(157)</sup>.

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<sup>(157)</sup> Report of the ICES Advisory Committee on Fishery Management, Advisory Committee on the Marine Environment and Advisory Committee on Ecosystems, ICES, 2006.



## Biodiversity



## Sufficiency of designated areas

**Definition:** The index of sufficiency of Member States proposals for sites designated under the habitats directive measures the extent to which Sites of Community Importance proposed by the Member States adequately cover the species and habitats listed in Annexes I and II to the habitats directive.



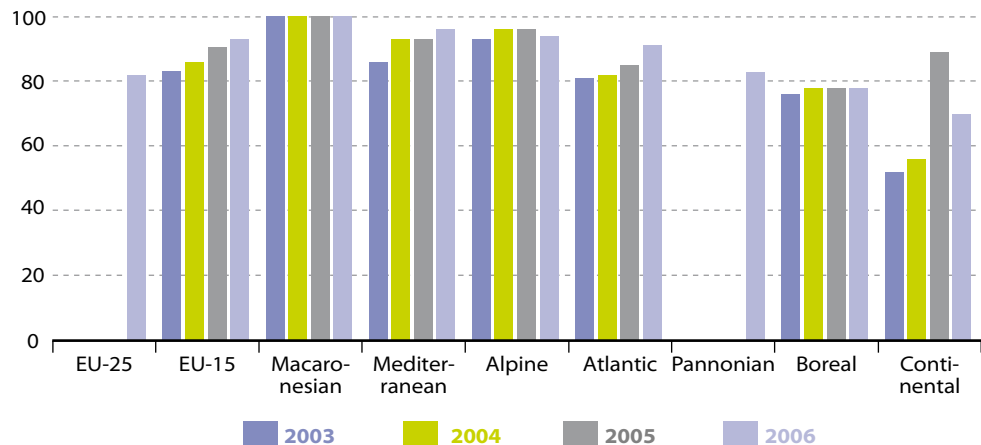
## Indicator relevance

The reviewed sustainable development strategy (SDS, 2006) underlines the EU's commitment to the priority of halting the loss of biodiversity by 2010. It also specifies that Member States should pay particular attention to the need for improved implementation of Natura 2000. The establishment of protected sites under the birds and habitats directives is a direct response to the aim of protecting biodiversity. The Natura 2000 network, the cornerstone of EU nature protection policy<sup>(158)</sup> comprises the sites designated by Member States under these two directives. Actions recommended by the SDS include the completion of the Natura 2000 network, species protection and management policies as well as the designation of marine areas. The sufficiency index, so far only compiled for the habitats directive, indicates the degree of implementation of the EU main biodiversity policy instrument, both in the bio-geographical regions and in Member States. 100 % indicates sufficiency of proposals for all Annex I terrestrial habitats types and Annex II terrestrial species of Community interest occurring in Member States' territories.

<sup>(158)</sup> Enlargements of the EU in 2004 and 2007 were the occasion of amendments to the directives as additions were made to their annexes, which list species and areas requiring particular attention. In 2007, two new bio-geographic regions were also added to the habitats directive: the Black Sea and the Steppic regions.

**Figure 5.3:**  
Sufficiency of sites designated under the EU habitats directive, by bio-geographic region (%)

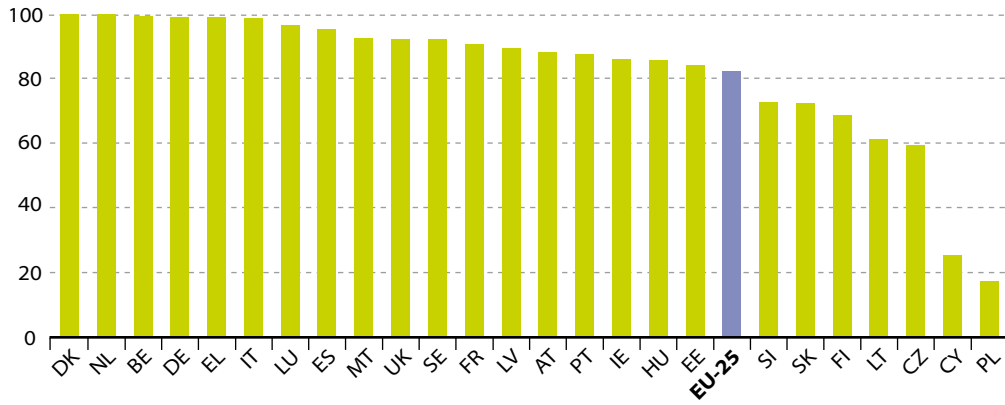
Source: European Commission, Directorate-General for the Environment.



## Analysis

Displaying steady improvement, the EU-15 sufficiency index gained 10 points, rising from 83 in 2003 to 93 in 2006. However, the index for the EU-25 had only reached 82 in 2006. While it was above 90 in the Macaronesian, Mediterranean, Alpine and Atlantic bio-geographical regions, the large Boreal and Continental regions of the EU were lagging behind. However, the index for the latter region progressed, gaining an annual average of six points between 2003 and 2006. The majority of Member States that joined the EU-25 in 2004 had sufficiency indices that were close to EU average in 2006. Belgium, Denmark and the Netherlands had achieved 100 % sufficiency in 2006, while Cyprus and Poland displayed indices of 25 % or under.

The index may go down from one year to the next (for example in the case of the Alpine and the Continental regions from 2004 to 2005), when there is a difference between the list analysed in bio-geographical seminars in a particular year, and the official list submitted the following year.



**Figure 5.4:**  
Sufficiency of sites designated under the habitats directive in 2006 (%)

Source: European Commission, Directorate-General for the Environment.



## Freshwater resources

## Water abstraction

**Definition:** This indicator looks at **total water abstraction as a percentage of available resources, separated into groundwater and surface water.** Annual total gross abstraction from groundwater is presented as a percentage of Member States' renewable groundwater resources available for abstraction, which are defined as long-term annual average groundwater available for abstraction. Annual total gross abstraction made from fresh surface water is presented as a percentage of Member States' renewable surface water resources available for abstraction, which are calculated as total long-term fresh water resources less groundwater available for abstraction.



## Indicator relevance

The indicator provides an assessment of pressure on long-term water resources, purely in terms of quantity.

The renewed sustainable development strategy underlines the necessity for improving integrated water resources management and avoiding overexploitation. The main instrument for European water policy is the water framework directive <sup>(159)</sup>, which aims to achieve coherent and sustainable water management, both in terms of quality and quantity.

Although groundwater and surface water are presented separately, there are of course hydrological interactions between the two types of resources.

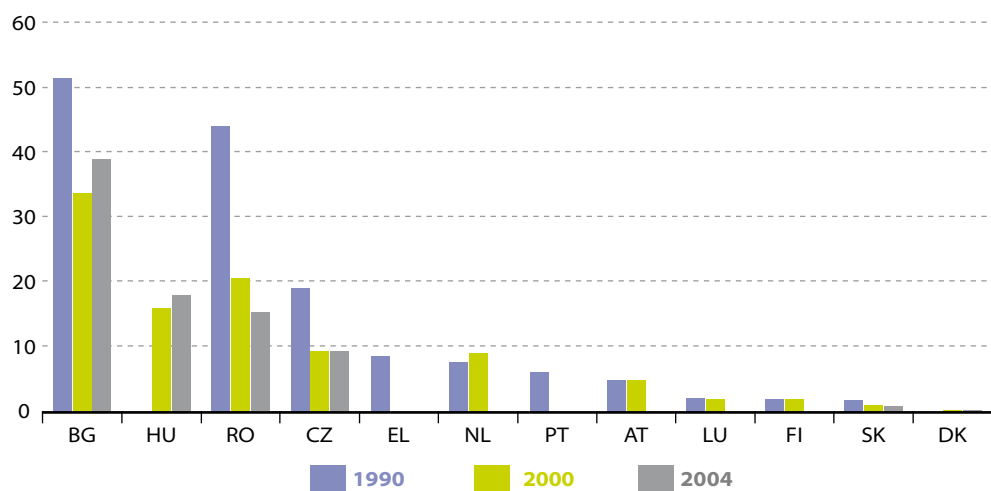
Abstraction varies from year to year due to weather, changes in industrial productivity and water-consuming processes. Small variations should not necessarily be interpreted as trends.

<sup>(159)</sup> Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy.

**Figure 5.5: Total gross abstraction made from fresh surface water as a percentage of renewable surface water resources available for annual abstraction (%)**

NB: 2004 refers to 2003 for BG, SK, and to 2002 for CZ, HU; 2000 refers to 2001 for NL, to 1999 for FI, LU, AT; 1990 refers to 1989 for LU.

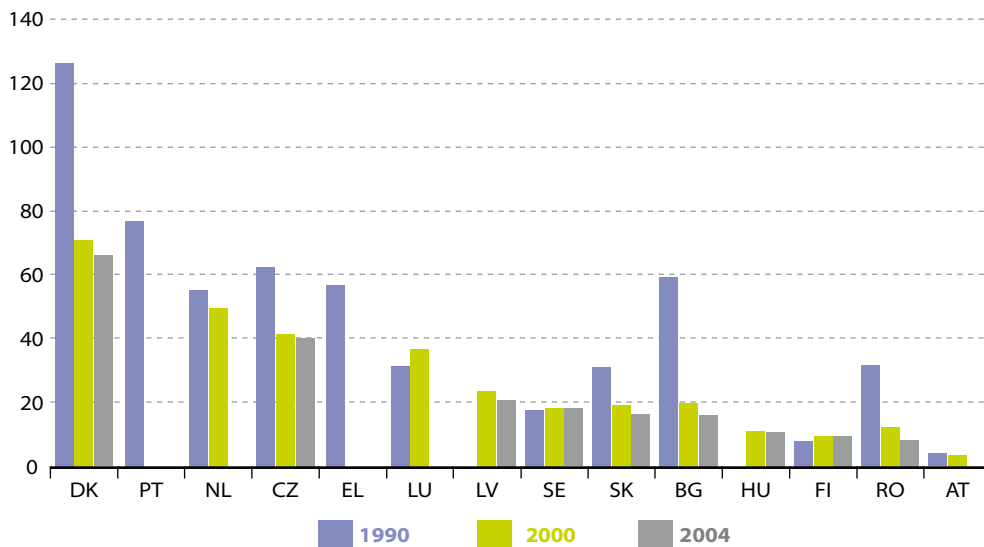
Source: Eurostat.



## Analysis

Water abstraction from surface water resources decreased or was relatively stable in all Member States for which data are available from 1990 to 2000. Amongst the few countries for which the comparison is possible, the proportion of surface water abstraction continued decreasing in Romania and Slovakia, but increased in particular in Bulgaria.





**Figure 5.6: Total gross abstraction made from fresh ground water as a percentage of long-term annual average groundwater available for annual abstraction (%)**

*NB:* 2004 refers to 2003 for BG, and to 2002 for: CZ, HU; 2000 refers to 2001 for NL, to 1999 for: LU, AT; 1990 refers to 1989 for LU, PT.

Groundwater abstraction decreased in many Member States. This trend is visible from 1990 to 2000 in most Member States for which data were available, and available data also show a continued decrease in many countries from 2000 to 2004. Data show clearly unsustainable abstraction rates of more than 100 % in Denmark in 1990, but abstraction had reduced to slightly above 60 % of available resources by 2004.

Availability of water for abstraction is strongly determined by geographical location within the European Union. Geo-climatic differences influence whether more surface water or groundwater is available for use. In Malta and Denmark, for example, mainly groundwater is consumed. The consumption of both surface and groundwater is found to be driven by four main economic activities, for which relative importance varies across Member States: cooling in electricity production; the public water supply; the manufacturing industry and agriculture, forestry and fishing (including irrigation), see additional data on the Eurostat website.



## Freshwater resources

## Waste water treatment

**Definition:** This indicator is defined as the **percentage of the population connected to waste water treatment systems with at least secondary treatment**. Thereby, urban waste water is treated by a process generally involving biological treatment with a secondary settlement or other process, resulting in a biochemical oxygen demand (BOD) removal of at least 70 % and a chemical oxygen demand (COD) removal of at least 75 %.



## Indicator relevance

<sup>(160)</sup> Council Directive 91/271/EEC concerning urban waste water treatment.

<sup>(161)</sup> Commission Directive 98/15/EC amending Council Directive 91/271/EEC with respect to certain requirements established in Annex I thereto.

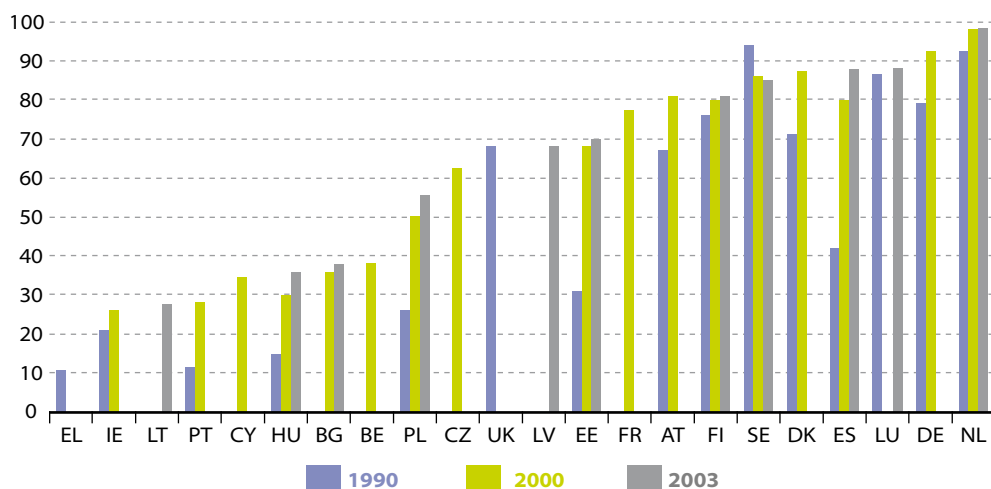
The indicator monitors the degree of treatment of waste water. The discharge of non-treated waste water is largely responsible for the pollution of surface water and some coastal areas, and detrimental consequences of waste water discharges may include eutrophication, bacterial pollution and contamination by heavy metals and other toxic substances. Waste water treatment is part of the set of options for integrated water management, which the renewed strategy encourages Member States to work towards.

The urban waste water treatment directive <sup>(160)</sup>, as amended <sup>(161)</sup>, sets deadlines for applying waste water treatment before discharge. The basic requirement is secondary level treatment. However, treatment has to be more stringent (secondary plus tertiary treatment) for discharges into sensitive areas identified by Member States.

**Figure 5.7:**  
Population connected to urban waste water treatment systems with at least secondary treatment (%)

NB: 2003 refers to 2002: EE, ES, HU, NL, FI & SE. 2000 refers to 1998: PT, BE, AT, DK; to 1999: CZ & IE; to 2001: FR, DE. 1990 refers to 1989: ES & LU; to 1991: UK, DE; to 1992: EL, PL.

Source: Eurostat.



## Analysis

In 2003, at least a quarter of the population was connected to secondary waste water treatment systems in all countries for which data were available. Progress was apparent from 1990 to 2000 in many, most notably in Portugal, Estonia, Spain, Poland and Hungary, and further progress took place from 2000 to 2003, although at a slower pace. While in several countries, particularly in the Nordic countries, but also for example in Spain, more than 80 % of the population were connected to at least a secondary treatment system, available data show that the percentage of population connected was still below 40 % in a number of EU countries in 2003 including Lithuania, Hungary and Bulgaria.

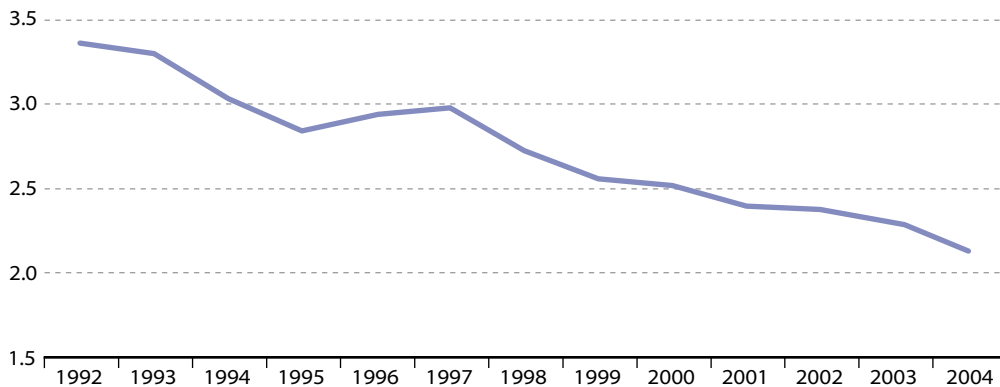
## Biochemical oxygen demand in rivers



**Definition:** This indicator shows **trends in annual median concentration of biological oxygen demand (BOD) in rivers**. BOD is the amount of oxygen required by aerobic microorganisms to decompose organic matter in a water sample. In most European countries the BOD5 test is used where oxygen consumption is measured based on the maximum rate of O<sub>2</sub> consumption in a water sample over a five-day period in the dark at 20°C. BOD5 is not an accurate quantitative test yet it provides an indication on water quality.

Water quality is an important consideration for integrated water resources management, advocated in the renewed sustainable development strategy. Biochemical oxygen demand (BOD) estimates the total amount of biodegradable organic matter in the system and is commonly used to determine water quality. High BOD is usually a result of organic pollution, caused by discharges from waste water treatment plants, industrial effluents, and water run-off. High BOD can result in the reduced chemical and biological quality of river water, impaired biodiversity of aquatic communities and microbiological contamination, which can affect the quality of drinking and bathing water. Sources of organic matter are discharges from waste water treatment plants, industrial effluents and agricultural run-off. The cleanest rivers have a five-day BOD of less than 1 mg/l. Moderately polluted rivers may have BOD5 values ranging from 2 mg/l to 8 mg/l. Efficiently treated municipal sewage (three-stage process) would have a BOD5 value of about 20 mg/l, untreated sewage a value of about 600 mg/l.

### Indicator relevance



**Figure 5.8:** Biochemical oxygen demand over five days (BOD5) in rivers of selected countries\* (mg/l) (median value)

NB:\* BE, BG, CZ, DK, FR, LV, LT, HU, AT, SI, SK and UK.

Source: European Environment Agency.

For the 12 Member States for which data were available, there has been a clear decrease in BOD5 for the period considered. The median BOD5 value of 3.36 mg/l in 1992 fell to 2.51 mg in 2000, an average annual decrease of 3.6 %. The trend continued from 2000 to 2004 when median BOD5 values fell by 4.1 % per year on average. This trend can be linked to the increase in the level of treatment of waste water in many Member States (see indicator on waste water treatment).

### Analysis



## Marine ecosystems

## Fishing fleet

**Definition:** The EU fishing effort is measured as **the total engine power of the fishing fleet** (in kW), **the tonnage of the fishing fleet** (in GT) and **the number of vessels**.



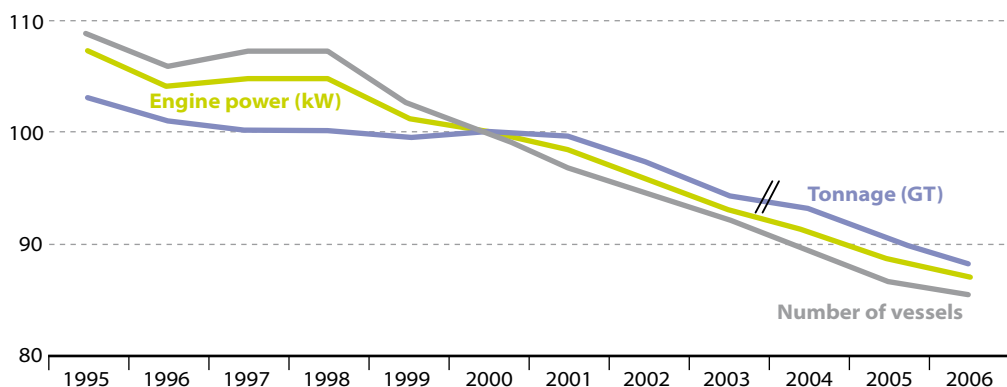
## Indicator relevance

While the 2001 Gothenburg Council had specifically stressed the need to address the overall fishing pressure by adapting the EU fishing effort to the level of available resources, the renewed sustainable development strategy focuses on the need of avoiding overexploitation of renewable natural resources such as fisheries. It also specifies that Member States and the Commission should make further efforts in the field of fisheries through the reformed common fisheries policy, which requires that Member States match fishing capacity with fishing possibilities. The size of fishing fleet, whether measured in terms of engine power, tonnage, or number of vessels, is meant to be a proxy of the pressure fishing exerts on fisheries resources. However, it is generally recognised that it does not correlate very well with fishing mortality. Because of continuous technological progress and the system of quotas, a decrease in the number of vessels, for example, does not necessarily mean that fishing mortality is reduced. An indicator related the effective fishing capacity and quotas needs to be developed.

**Figure 5.9: EU-15 fishing fleet: total engine power, total tonnage, and number of vessels**  
(index 2000=100)

NB: Break in series for tonnage.

Source: Eurostat.



## Analysis

From 1990 to 2000 the fishing fleet decreased by 1.7 % per year on average in terms of number of vessels, and by 1.4 % per year in terms of engine power. The decrease in terms of tonnage was of only 0.6 % per year, reflecting an increase in tonnage per vessel during this period. From 2000 to 2006, the decrease was stronger, reflecting again a similar trend in terms of a smaller decrease in tonnage compared with number of vessels or engine power, with the number of fishing vessels dropping by 2.6 %, engine power by 2.3 %, and tonnage by 2.1 % per year on average. The decrease in tonnage should however be interpreted with care because of changes in measurement during the period considered (see methodological notes).

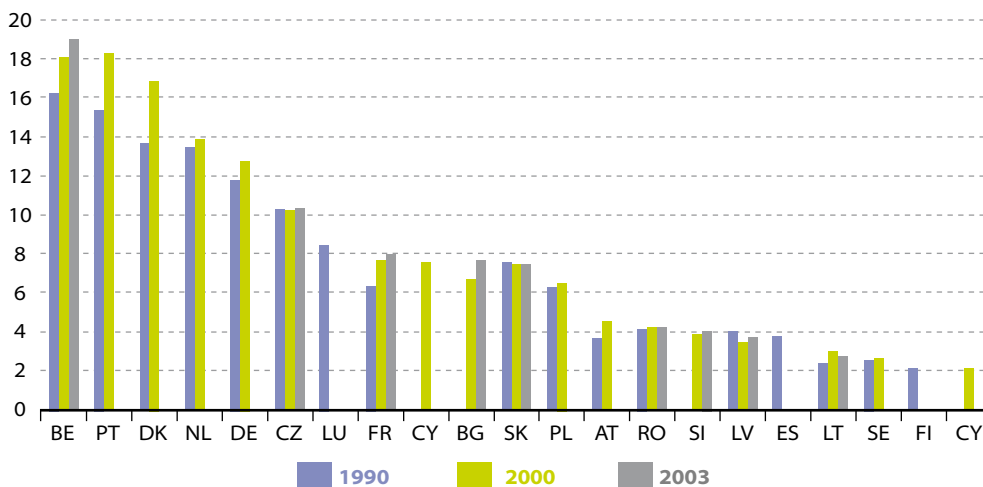
## Built-up areas



**Definition:** The indicator is defined as the **percentage of built-up land in total land area**. Built-up and related land is defined as residential land; industrial land; quarries, pits and mines; commercial land; land used by public services; land of mixed use; land used for transport and communications; for technical infrastructure; recreational and other open land. Scattered farm buildings, yards and annexes are excluded.

The overall objective of the renewed 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. The indicator on built-up areas is used as a proxy for land use change. Conversion of agricultural or natural land into artificial land leads to losses in ecosystem services. The indicator reflects more generally the pressures exerted by development on land resources, which are almost always irreversible and include the sealing of land and fragmentation of habitats. Sealing of land prevents the replenishment of aquifers, increases the pressure on the rainwater removal system and in some cases contributes to flooding as well as endangering biodiversity. These effects are worse when the built-up area is large, as is the case for urban areas. Fragmentation of habitats is associated with extensive linear structures such as roads and railway lines, and puts pressure on biodiversity by limiting the range available for breeding or finding food.

### Indicator relevance



**Figure 5.10:** Built-up area as a percentage of total land area (%)

Source: Eurostat.

From 1990 to 2000, the share of built-up areas increased in all countries for which data are available, except Slovakia and Latvia where it decreased, and the Czech Republic and Spain where it was stable. The largest increases took place in Denmark, Portugal and Belgium. Further increase up to 2005 is visible in countries for which data are available, in particular Belgium, and Bulgaria, except for Slovakia where the share was stable, and Lithuania where it decreased slightly. The share of built-up areas varies significantly across countries, ranging from almost 20 % for countries such as Belgium and Portugal to 3 % or less for Lithuania, Sweden, Finland, and Cyprus. This reflects the range of drivers in different countries, such as population density, urbanisation, transport infrastructure, industrial premises, and tourism.

### Analysis



## Land use

## Forest: increment and fellings

**Definition:** The indicator is defined as the **ratio of annual fellings to net annual increment**.

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.



## Indicator relevance

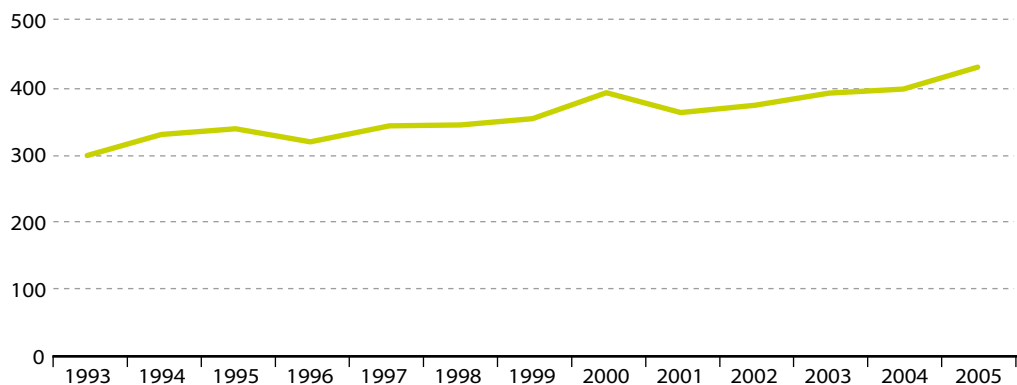
The renewed sustainable development strategy states that action aiming at the conservation and management of natural resources should include strengthened sustainable forest management. It also calls for the achievement of the United Nations global objectives on forests, which include increasing the area of protected forests and other sustainably managed forests, and the proportion of forest products derived from sustainably managed forests. Finally, the strategy foresees an EU forest action plan, adopted in 2006<sup>(162)</sup>, which includes amongst its objectives ‘To improve the long-term competitiveness of the forest sector and to enhance the sustainable use of forest products and services.’

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.

<sup>(162)</sup> EU forest action plan COM(2006) 302.

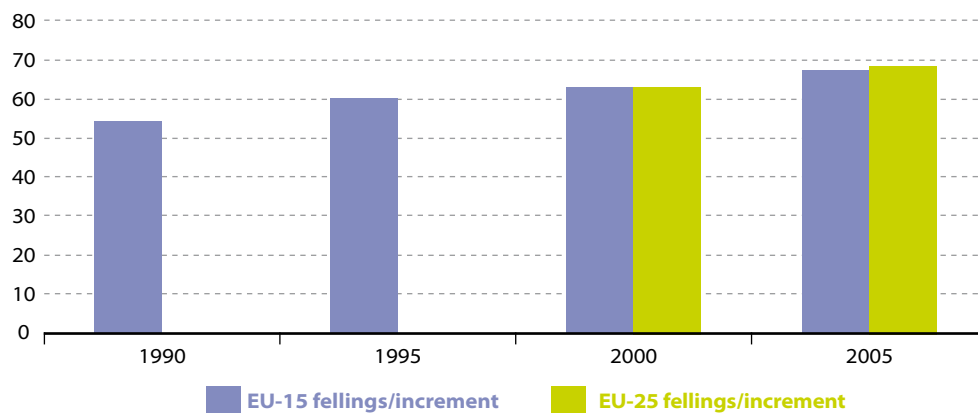
**Figure 5.11: EU-27 forest removals**  
(million m<sup>3</sup>)

Source: Eurostat.  
NB: Removals are reported in cubic metres underbark (i.e. excluding bark)



The European Union is a major wood producer. Demand for construction, for wood fibre and other wood products, as well as increased exports are driving production of roundwood. Between 1993 and 2000, removals in the EU-27 increased fairly rapidly, at 4 % per year on average. Removals continued to grow, though at less than half the annual rate, at 1.9 % on average. The sharper increases of 11 % from 1999 to 2000, and of 8 % from 2004 to 2005 are due to timber felled by windstorms in some Member States<sup>(163)</sup>.

<sup>(163)</sup> Roundwood production 2005, Eurostat Data in focus 7/2007.



**Figure 5.12: Forest annual fellings as a share of net annual increment (%)**

*NB:* Increment and fellings are reported in cubic metres overbark (i.e. including bark). 2005 figures for increment are repeated from TBFRA 2000. FRA 2005 figures for fellings refer to removals.

Source: UN-ECE (FRA 1995, TBFRA 2000, FRA 2005).

Comparing increment and fellings overbark in the EU-15, the annual average increase of fellings amounted to 3.2 % during the 1990-2000 period, while increment only increased by 1 % per year. The increase in fellings slowed down to 1.4 % annually in the following period (2000-2005). The increase in fellings was slightly higher in the EU-25, at 1.6 % per year on average.

The ratio of fellings to increment in the EU-15 therefore rose from 54 % in 1990 to 63 % in 2000. Ratios were similar in the EU-25, with 63 % in 2000. It is not possible to estimate precisely a further increase of the ratio in 2005, as 2005 increment data were not available at the time of publishing this report. With a conservative assumption that increment remained stable, ratios would be of 67 % in the EU-15 and 68 % in the EU-25 in 2005, indicating that management is still sustainable.

## Analysis



## Land use

## Defoliation

**Definition:** This indicator is defined as the **percentage of trees on forest and other wooded land in the defoliation classes moderate, severe and dead** (see methodological notes). Defoliation is needle or leaf loss in the assessable crown as compared with a reference tree.



## Indicator relevance

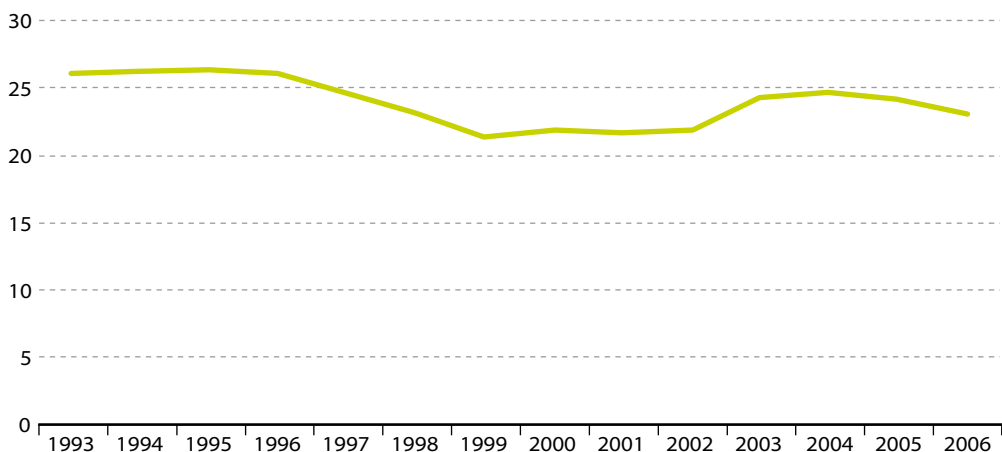
The reviewed SDS (2006) calls for effective contribution to achieving, by 2015, the four United Nations global objectives on forests (2006), which include the aim of increasing efforts to prevent forest degradation. The EU forest action plan includes as one of its objective to ‘maintain and appropriately enhance biodiversity, carbon sequestration, integrity, health and resilience of forest ecosystems at multiple geographical scales’.

Defoliation is influenced by climatic factors (especially drought, longer and warmer vegetation seasons), soil conditions, atmospheric pollution and forest pathogens. The importance of each factor depends on climatic regions and species, and varies from year to year. The indicator on defoliation is used to monitor the health condition of forest trees in Europe.

**Figure 5.13: EU-27 evolution of forest trees damaged by defoliation (%)**

NB: Figures for Malta not included.

Source: European Commission, Joint Research Centre.



## Analysis

From a level of about 26 % in the mid 1990s, defoliation decreased in the EU-27 to 20.8 % in the second half of the decade, resulting in an average annual decline of 2.5 % from 1993 to 2000. Defoliation increased again after 2000, and although there was a decrease in 2006, the resulting mean annual growth rate from 2000 to 2006 was just above 1 %. Although a variety of factors influence defoliation, the extreme heat and drought in large parts of Europe during the summer of 2003 have contributed to higher defoliation in that year, and also influenced later years<sup>(164)</sup>. In 2006, the highest defoliation rates were found in the Czech Republic, Luxembourg, and Bulgaria where 40 % of trees assessed or more were damaged. The rate of defoliation was less than 10 % in Estonia, Denmark, Ireland and Finland (see country breakdown on the SDI website).

<sup>(164)</sup> *The condition of forests in Europe. 2006 Executive Report. United Nations Economic Commission for Europe, Convention on Long-range Transboundary Air Pollution.*



## Methodological notes

### Common birds

The data are collected by volunteer observers within the pan-European common bird monitoring scheme (PECBMS: a joint project of the European Bird Census Council, the Royal Society for the Protection of Birds, BirdLife International, and Statistics Netherlands) and they are compiled by Statistics Netherlands.

The EU index is based on trend data from 18 EU Member States, derived from annually operated national breeding bird surveys spanning different periods, and collated through PECBMS. Countries contributing trend information (in the order in which they joined the scheme) are: United Kingdom (1966), Sweden (1975), Denmark (1976), Czech Republic (1982), Finland (1983), France (1989), The Netherlands (1990), Germany (West 1989, East 1991), Belgium (Brussels region, 1992, Wallonia 1990), Latvia (1995), Spain (1996), Austria (1998), Ireland (1998), Hungary (1999), Italy (2000), Poland (2000), Estonia (1983 until 2000) and Portugal (2004).

Survey details and methods vary by country and region but all are based on well-established monitoring principles based on statistical expertise and efforts are under way to increase the level of harmonisation. Counts take place during the breeding season (typically, in Europe, between April and July) when the populations are generally non-mobile. Between two and 12 visits to each site would be typical during the course of one year. It is common that this sort of field survey results in missing counts for some sites. Such missing data are estimated using a program called TRIM (trends and indices for monitoring data) designed to analyse time series of counts with missing observations using Poisson regression.

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. Supranational indices are then produced by aggregating national indices for each species 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. Because national schemes have run for different lengths of time, there are missing year totals for particular countries. These are estimated using TRIM from the year totals of other countries in the same region.

The individual EU 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.

### Common farmland birds (33 species):

Eurasian skylark (*Alauda arvensis*), tawny pipit (*Anthus campestris*), meadow pipit (*Anthus pratensis*), greater short-toed lark (*Calandrella brachydactyla*), linnet (*Carduelis cannabina*), white stork (*Ciconia ciconia*), rook (*Corvus frugilegus*), ciril bunting (*Emberiza cirilus*), yellowhammer

(*Emberiza citrinella*), ortolan bunting (*Emberiza hortulana*), common kestrel (*Falco tinnunculus*), crested lark (*Galerida cristata*), thekla lark (*Galerida theklae*), barn swallow (*Hirundo rustica*), red-backed shrike (*Lanius collurio*), woodchat shrike (*Lanius senator*), black-tailed godwit (*Limosa limosa*), calandra lark (*Melanocorypha calandra*), corn bunting (*Miliaria calandra*), yellow wagtail (*Motacilla flava*), black-eared wheatear (*Oenanthe hispanica*), Eurasian tree sparrow (*Passer montanus*), grey partridge (*Perdix perdix*), rock sparrow (*Petronia petronia*), whinchat (*Saxicola rubetra*), common stonechat (*Saxicola torquata*), European serin (*Serinus serinus*), European turtle dove (*Streptopelia turtur*), spotless starling (*Sturnus unicolor*), common starling (*Sturnus vulgaris*), common whitethroat (*Sylvia communis*), Eurasian hoopoe (*Upupa epops*), northern lapwing (*Vanellus vanellus*).

### All common birds (123 species):

All common farmland birds (33 species) plus the following 90 species:

Northern sparrow hawk (*Accipiter nisus*), great reed-warbler (*Acrocephalus arundinaceus*), marsh warbler (*Acrocephalus palustris*), sedge warbler (*Acrocephalus schoenobaenus*), Eurasian reed warbler (*Acrocephalus scirpaceus*), common sandpiper (*Actitis hypoleucos*), long-tailed tit (*Aegithalos caudatus*), tree pipit (*Anthus trivialis*), common swift (*Apus apus*), hazel grouse (*Bonasa bonasia*), common buzzard (*Buteo buteo*), goldfinch (*Carduelis carduelis*), greenfinch (*Carduelis chloris*), redpoll (*Carduelis flammea*), Eurasian siskin (*Carduelis spinus*), common rosefinch (*Carpodacus erythrinus*), short-toed treecreeper (*Certhia brachydactyla*), Eurasian treecreeper (*Certhia familiaris*), Cetti's warbler (*Cettia cetti*), zitting cisticola (*Cisticola juncidis*), hawfinch (*Coccothraustes coccothraustes*), stock pigeon (*Columba oenas*), wood pigeon (*Columba palumbus*), common raven (*Corvus corax*), carrion crow (*Corvus corone*), Eurasian jackdaw (*Corvus monedula*), common cuckoo (*Cuculus canorus*), common house martin (*Delichon urbica*), great spotted woodpecker (*Dendrocopos major*), lesser spotted woodpecker (*Dendrocopos minor*), black woodpecker (*Dryocopus martius*), ciril bunting (*Emberiza cirilus*), reed bunting (*Emberiza schoeniclus*), European robin (*Erithacus rubecula*), collared flycatcher (*Ficedula albicollis*), European pied flycatcher (*Ficedula hypoleuca*), chaffinch (*Fringilla coelebs*), brambling (*Fringilla montifringilla*), common snipe (*Gallinago gallinago*), Eurasian jay (*Garrulus glandarius*), icterine warbler (*Hippolais icterina*), melodious warbler (*Hippolais polyglotta*), Eurasian crag martin (*Hirundo rupestris*), wryneck (*Jynx torquilla*), river warbler (*Locustella fluviatilis*), grasshopper warbler (*Locustella naevia*), wood lark (*Lullula arborea*), thrush nightingale (*Luscinia luscinia*), rufous nightingale (*Luscinia megarhynchos*), European bee-eater (*Merops apiaster*), grey wagtail (*Motacilla cinerea*), yellow wagtail (*Motacilla flava*), spotted flycatcher (*Muscicapa striata*), spotted nutcracker (*Nucifraga caryocatactes*), northern wheatear (*Oenanthe oenanthe*), Eurasian golden oriole (*Oriolus oriolus*), blue tit (*Parus caeruleus*), crested tit (*Parus cristatus*), great tit (*Parus major*), willow tit (*Parus montanus*), marsh tit (*Parus palustris*), house sparrow (*Passer domesticus*), black redstart (*Phoenicurus ochruros*), common



redstart (*Phoenicurus phoenicurus*), western Bonelli's warbler (*Phylloscopus bonelli*), common chiffchaff (*Phylloscopus collybita*), wood warbler (*Phylloscopus sibilatrix*), willow warbler (*Phylloscopus trochilus*), black-billed magpie (*Pica pica*), grey-faced woodpecker (*Picus canus*), green woodpecker (*Picus viridis*), dunnoek (*Prunella modularis*), red-billed chough (*Pyrrhonorax pyrrhonorax*), Eurasian bullfinch (*Pyrrhula pyrrhula*), firecrest (*Regulus ignicapilla*), goldcrest (*Regulus regulus*), wood nuthatch (*Sitta europaea*), Eurasian collared dove (*Streptopelia decaocto*), blackcap (*Sylvia atricapilla*), garden warbler (*Sylvia borin*), subalpine warbler (*Sylvia cantillans*), lesser whitethroat (*Sylvia curruca*), Sardinian warbler (*Sylvia melanocephala*), Dartford warbler (*Sylvia undata*), winter wren (*Troglodytes troglodytes*), redwing (*Turdus iliacus*), Eurasian blackbird (*Turdus merula*), song thrush (*Turdus philomelos*), fieldfare (*Turdus pilaris*), mistle thrush (*Turdus viscivorus*).

The index presented here is the third set of common bird indicators, published in 2007, which implements a series of methodological improvements and refinements. Changes in the farmland bird index include in particular changes in species classification leading to the addition of 17 farmland bird species to the index, the exclusion of *Burhinus oedicephalus*, *Carduelis cannabina*, and *Ciconia ciconia* because of sparse data, and the inclusion of new data from Portugal, Wallonia, and Estonia, as well as better and additional species data from other countries (see methodological description of the previous index in 2005 report <sup>(165)</sup>).

Data on common birds are also used in the EEA core set of indicators (Box 5.3) in 'species diversity' (CSI 009), as well as in the SEBI 2010 biodiversity indicators set (Box 5.4). Farmland birds are part of the EU set of agri-environmental indicators (Box 4.2).

### Box 5.3: EEA core set of indicators

The European Environment Agency (EEA) has developed a core set of indicators (CSI) with the aim of providing a manageable and stable basis for indicator reporting. Another important issue is to prioritise improvements in the quality and geographical coverage of data flows, especially priority data flows of the European environment information and observation network (Eionet). In all, 37 indicators were selected, covering six environmental themes (air pollution and ozone depletion, climate change, waste, water, biodiversity and terrestrial environment) and four sectors (agriculture, energy, transport and fisheries).

The selection criteria included: policy relevance (supporting EU policy priority issues); monitoring progress toward quantified targets; ready available and routinely collected data for EEA countries within a specified timescale, at reasonable cost-benefit ratio. There are 40 different sources of data and around 100 different data sets. Eurostat is the main data source with about 30 data sets followed by the Environment DG with about 14 data sets, and the EEA is the source for nine data sets on air, water, soil, land cover and designated areas. The CSI is published on the EEA website on <http://themes.eea.europa.eu/IMS/CSI>.

### Fish catches

Figures provided are the percentage of the 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 (ICES). 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. Stocks selected are those for which ICES provides management advice to the Community.

If data exist, then a stock is considered 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, as recommended by ICES. Sometimes these estimates are missing and here ICES stresses the necessity of another estimation method. See: ICES Report of the Management Committee for the Advisory Process.

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.

In the Mediterranean there is not such a strong tradition of international fisheries management. However, as part of the 2002 CFP reform, the European Community was asked to promote the development of a Mediterranean-wide cooperation programme, especially by strengthening the role of the GFCM (General Fisheries Commission for the Mediterranean). See for example: Community action plan for the conservation and sustainable exploitation of fisheries resources in the Mediterranean Sea under the common fisheries policy COM(2002) 535.

Time coverage is the annual assessment report by the ACFM (Advisory Committee on Fishery Management) of ICES. Further details on the way ICES formulates advice in precautionary terms can be obtained from the ICES website <http://www.ices.dk>

The following stocks (and corresponding main species) are considered:

- Benthic: nephrops, prawns, flatfish, anglerfish,
- Demersal: roundfish such as cod, haddock, whiting,

<sup>(165)</sup> *Measuring progress towards a more sustainable Europe – Sustainable development indicators for the European Union*. 2005 edition. Panorama of the European Union, European Commission, Eurostat.

- Industrial (production of meal and oil): sprat, sandeel, Norway pout,
- Pelagic: 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 purposes of economic analysis as it brings together types of fish of comparable commercial value, although important differences still occur within each type.

This indicator is also included in the EEA core set of indicators (Box 5.3) in 'status of marine fish stocks' (CSI 032), and is also part of the SEBI 2010 biodiversity indicator set (Box 5.4).

#### Sufficiency of designated areas

In 1992, the European Community adopted Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC habitats directive). This is the means by which the Community meets its obligations as a signatory of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The provisions of the directive require Member States to introduce a range of measures including the protection of species listed in the Annexes; to undertake surveillance of habitats and species; and to produce a report every six years on the implementation of the directive. The 218 habitats listed in Annex I to the directive and the 887 species<sup>(166)</sup> listed in Annex II are to be protected by means of a network of sites. Each Member State is required to prepare and propose a national list of sites for evaluation in order to form a European network of sites of Community importance (SCIs). Once adopted, these are designated by Member States as special areas of conservation (SACs), and along with special protection areas (SPAs) classified under the EC birds directive, form a network of protected areas known as Natura 2000. The directive was amended in 1997 by a technical adaptation directive. The annexes were further amended by the Environment Chapter of the Treaty of Accession 2003. The Council adopted a directive effecting the changes in the field of environment, by reason of the accession of Bulgaria and Romania (Directive 2006/105/EC of 20 November 2006 adapting Directives 73/239/EEC, 74/557/EEC and 2002/83/EC).

The habitats directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and if there are imperative reasons of overriding public interest. In such cases, compensation measures will be necessary to ensure the overall integrity of network of sites. As a consequence of amendments to the birds directive, these measures are to be applied to SPAs as well. Member States shall also endeavour to encourage the management of features of the landscape to support the Natura 2000 network.

For each bio-geographical region, seminars are organised by the European Commission and the European Topic Centre on Biological Diversity. Their goal is to assess if each habitat and each species of Annexes I and II occurring in the region is sufficiently represented in the sites proposed as being of Community interest on the national list presented by a Member State (pSCIs). The conclusions from the bio-geographical seminars provide data for development of the Sufficiency indicator.

The indicator calculates the sum, by bio-geographical region and per country, of the proportion of Annex I habitats and Annex II species that are sufficiently represented in the pSCIs, 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.

$$\text{SUFFMS} = \sum_{i=1 \text{ to } i=n} ((\text{habi} / \text{HABi} + \text{spi} / \text{SPi}) / 2) * (\text{Area}(B_i) / \text{Area}(\text{MS})), \quad \text{where}$$

$n$  = number of bio-geographical regions within a Member State

$\text{habi}$  = number of Annex I habitats sufficiently represented for the bio-geographical region  $i$

$\text{HABi}$  = number of Annex I habitats listed in the Commission's reference list

$\text{spi}$  = number of Annex II species sufficiently represented for the bio-geographical region  $i$

#### Box 5.4: Streamlining European 2010 biodiversity indicators (SEBI 2010)

The EU Environment Council in June 2004 welcomed the set of biodiversity indicators referred to in the 'message from Malahide', produced under the Irish Presidency of the EU that year, and based on the first set of indicators adopted globally earlier in 2004 at COP 7 of the Convention on Biological Diversity in Kuala Lumpur. The Council also urged the European Commission to develop, test and finalise the EU set having regard to its evolving nature. The same framework of 16 headline indicators was also adopted by the PEBLDS (pan-

European biological and landscape diversity strategy) Council in 2005. Subsequently the SEBI 2010 project was set up to oversee implementation of the adopted framework on the EU and pan-European level. In 2006, the European Commission issued a communication on halting the loss of biodiversity to 2010 and beyond<sup>(167)</sup>, which includes in annex a proposal for a headline set of biodiversity indicators. The achievements of the first phase (2005–2007) of the SEBI 2010 initiative are documented in a recent EEA technical report<sup>(168)</sup>.

<sup>(166)</sup> Number of species and habitats for the EU-25.

<sup>(167)</sup> COM(2006) 216.

<sup>(168)</sup> Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe, Report No 11/2007, European Environment Agency.



$SPI =$  number of Annex II species listed in the Commission's reference list

$Area(B)_i =$  surface area of bio-geographical region  $i$  within a Member State ( $km^2$ ).

This indicator is also used in the EEA core set of indicators (Box 5.3) in 'designated areas' (CSI 008), and in the SEBI 2010 biodiversity indicators set (Box 5.4).

### Water abstraction

The data are collected by Member States via the joint OECD/Eurostat questionnaire on the state of the environment, inland waters section.

Annual total gross abstractions made from fresh surface water are presented as a percentage of Member States' renewable surface water resources available for abstraction, which are calculated as total fresh water resources less groundwater available for annual abstraction. Annual total gross abstractions made from groundwater are presented as a percentage of Member States' renewable groundwater resources available for abstraction, which are defined as long-term annual average groundwater available for annual abstraction. The minimum period of calculation for the long-term annual average is 20 years.

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. Mine water and drainage water are included. Water abstractions from precipitation (e.g. rain water collected for use) are included under abstractions from surface water. The amounts of water artificially charged or injected are attributed to abstractions from that water resource from which they were originally withdrawn. Water used for hydroelectricity generation is an *in-situ* use and it is excluded. Water abstractions from groundwater resources in any given time period are defined as the difference between the total amount of water withdrawn from aquifers and the total amount charged artificially or injected into aquifers.

Total water abstraction per year as percentage of long-term freshwater resources, or the 'water exploitation index', is part of the EEA core set of indicators in 'use of freshwater resources' (CSI 018)(Box 5.3).

### Waste water treatment

The data are collected by Member States via the joint OECD/Eurostat questionnaire on the state of the environment, inland waters section.

Urban waste water treatment includes primary, secondary and tertiary treatment. Connection is normally via a sewer pipe system but can equally be ensured by trucks transporting the sewage from storage tanks to the treatment plants. Note that the definition of 'connection' contained in the urban waste water treatment directive (UWWTD), which focuses exclusively on pipe systems, deviates from this convention, used in international water statistics.

Independent waste water collection systems with independent treatment refer to various types of small independent systems (examples are septic tanks, reedbed systems or miniaturised biological treatment plants) that are primarily used in sparsely populated rural areas and typically are designed to treat between one and 50 population equivalents.

Waste water treatment levels are defined as follows, in accordance with the UWWTD:

**Primary treatment:** treatment of (urban) waste water by a physical and/or chemical process involving settlement of suspended solids, or other process in which the biochemical oxygen demand (BOD) of the incoming waste water is reduced by at least 20 % before discharge and the total suspended solids of the incoming waste water are reduced by at least 50 %.

**Secondary treatment:** treatment of (urban) waste water by a process generally involving biological treatment with a secondary settlement or other process, resulting in a BOD removal of at least 70 % and a COD removal of at least 75 %.

**Tertiary treatment:** treatment, supplementary to the secondary treatment, of nitrogen (nitrification-denitrification) and/or phosphorus and/or any other pollutant which affects the quality or a specific use of the water, such as microbiological pollution, colour, etc. This is the best available technology.

### Biochemical oxygen demand in rivers

The data are collected through the Eurowaternet process and are therefore subsamples of national data assembled for the purpose of providing comparable indicators. The river stations selected from Waterbase for the indicator are the Eurowaternet representative type stations or stations that are deemed to be representative. Annually aggregated data as calculated by countries are used. At the European level, the median values of the annual mean concentrations of all stations for each year of the time series are then calculated.

The class-defining values for BOD concentrations are based on the range of concentrations found in Waterbase and only give an indication of the relative concentrations of BOD in each country.

The data sets for rivers include almost all European countries, but the time coverage varies from country to country. Consistent time series trends are calculated, using only stations that have recorded concentrations for each year included in the time series. Most countries measure organic matter as BOD over five days but a few countries measure BOD over seven days, which may introduce a small uncertainty in comparisons between countries.

This indicator is the European Environment Agency core set indicator (Box 5.3) 'oxygen consuming substances in rivers' (CSI 019), and is also part of the SEBI 2010 biodiversity indicator set (Box 5.4).

### Fishing fleet

Pursuant to Commission Regulation (EC) No 109/94<sup>(169)</sup>, EU Member States are required to send records from national registers of fishing vessels to the Commission. Once annually Eurostat receives edited records (length, tonnage, power and age of each vessel) from this file maintained by the Fisheries and Maritime Affairs DG to update the statistical register of fishing vessels. The statistics are compiled from this statistical register.

The new Member States, Bulgaria and Romania, have yet to commence submissions to the Fisheries and Maritime Affairs DG's administrative file and thus their fleet statistics are missing from this database.

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. In order to assess fleet capacity, the number of fishing vessels can be used to express the total fishing power or capacity of the fishing fleet if the fleet consists of only one type of vessel. If the fleet consists of vessels of different designs, determining the capacity of a given fishing vessel would require information on a number of vessel characteristics. Gross tonnage (GT), length and engine power would be amongst the most important characteristics, and it is likely that gross tonnage would be the most important single variable influencing fishing capacity.

The measure previously used for recording the tonnage of vessels was the gross registered tonnage (GRT) as defined by the London Convention. Under the terms of Regulation (EEC) No 2930/86<sup>(170)</sup> this has been replaced by the gross tonnage (GT) as defined by the Oslo Convention. This change in the method of measurement has taken place over a number of years and at differing speeds in the various countries. The GT of a vessel is generally greater than the GRT. Thus, while this change to GT was taking place (the fleet should have been entirely measured in accordance with Community law by 31 December 2003), changes in tonnage over time and between country may be influenced by differing proportions of the fleet using the new method of tonnage measurement.

### Built-up area

The data are taken from the joint Eurostat/OECD biannual questionnaire on land use.

The definitions and methods used for collection of data on built-up land vary from one country to another. Similarly the frequency of the collection of this data is not

harmonised between countries. In fact, as land use is often the responsibility of local authorities, the definitions, etc., may even differ within a country. The result is that it is very difficult to compare the data for the different Member States due to fundamental problems in the underlying data.

In 2001, Eurostat launched a harmonised survey of land use, based on a standardised manual of concepts on land cover and land use. Although intended primarily for data on agricultural land use, the survey will cover all uses of land. However, it will be several years before a time series allowing analysis of the increase in built-up land is available.

### Forestry: increment and fellings

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.

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 FRA 1995, TBFA 2000 (forest resources assessment for temperate and boreal countries), FRA 2005. FRA 2005 data were collected before the reference year and therefore contain projections for that year.

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.

This indicator is also part of the SEBI 2010 biodiversity indicator set (Box 5.4).

### Defoliation

In 1985, the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on forests (ICP forests) was established within the framework of the Convention on Long-range Transboundary Air Pollution of the United Nations Economic Commission for Europe. In 1986 the Member States of the European Union agreed to the European Union scheme on the protection of forests against atmospheric pollution (Regulation (EEC) No 3528/86) and contributed to the implementation of clean air policies at European level. The participating countries decided to obtain information on the forest condition through a common monitoring scheme.

Defoliation classes refer to the following levels of degradation:

<sup>(169)</sup> Commission Regulation (EC) No 109/94 concerning the fishing vessel register of the Community.

<sup>(170)</sup> Council Regulation (EEC) No 2930/86 defining characteristics for fishing vessels.



Defoliation class	Needle/leaf loss	Degree of defoliation
Class 0	up to 10 %	none
Class 1	>10 - 25 %	slight (warning stage)
Class 2	>25 - 60 %	moderate
Class 3	>60 - <100 %	severe
Class 4	100 %	dead

The extensive monitoring of a systematic sampling network includes the annual assessment of crown condition of the trees, their nutrition and the forest soil condition on an extensive scale. This monitoring intensity stage is designated as 'level I' and was created in 1986 with the crown condition assessment. The principal goal is to obtain information on the development of the crown condition on a European

scale in connection with possible causes including air pollution. The extensive monitoring network comprises permanent plots throughout Europe arranged in a 16 x 16 km grid. The EU aggregate figure was compiled by the Joint Research Centre from the forest focus database of the Level I programme (16x16km grid).







# Public health

# 6

## **Strategy objective:**

*'to promote good public health on equal conditions and improve protection against health threats'*



## Policy Background

The renewed EU sustainable development strategy of June 2006 'aims at the continuous improvement of the quality of life and well-being', and to that end it promotes a high level of health protection. The overall objective for public health in the strategy is 'to promote good public health on equal conditions and improve protection against health threats'.

Article 152 of the Treaty establishing the European Community lays down that 'a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities'. This is a recognition of the fact that whilst health is key to the well-being of European citizens, and is a fundamental right<sup>(171)</sup>, it is also heavily dependent on policies in a wide range of areas, including environmental, agricultural, industrial, trade, social and economic. The health of the population is also indispensable to economic development. Improvements in health status, and increases in life expectancy and in healthy life-years, lead to longer, more productive working lives. Ill health results in health care costs, absence from work and a loss in productivity.

Article 152 also states that 'Community action, which shall complement national policies, shall be directed towards improving public health, preventing human illness and diseases, and obviating sources of danger to human health'. At the Gothenburg European Council in June 2001, public health was singled out as one of the four priority areas for the sustainable development strategy.

The Commission has launched the process for the adoption of a new programme for Community action in the field of health for the period 2008-2013<sup>(172)</sup>. This proposal sets the framework for the Commission's funding of projects and is part of a strategy bringing together the broad range of Community health actions to define goals and priorities to help improve the health of European citizens. This proposal has three broad objectives.

**Improve citizens' health security.** It aims at protecting citizens against health threats and launches actions in the field of patient safety, injuries and accidents, and community legislation on blood, tissues and cells and in relation to the international health regulation.

**Promote health for prosperity and solidarity.** The aim here is to foster healthy active ageing and to help bridge inequalities, with a particular emphasis on the newer Member States. Other health determinants will also be covered such as nutrition, alcohol, tobacco and drug consumption as well as the quality of social and physical environments.

**Generate and disseminate health knowledge.** Under this objective, actions will be taken to exchange knowledge and best practice, e.g. regarding rare diseases and cross-border issues related to cooperation between health systems. It will also address gender health, children's health and mental health (key issues). Finally, other actions will allow to expand EU health monitoring and develop indicators and tools to disseminate information to citizens in a user-friendly manner, such as the EU health portal.

The Commission is also planning to adopt two key initiatives in 2007<sup>(173)</sup>. Firstly, a Community health strategy which will aim to put in place an overarching, strategic framework with measurable objectives which will help to set the direction for core issues for improving health in the EU over the coming decade. These will include addressing health threats and tackling health inequalities, and will encompass health services and health promotion. The strategy will take a new strategic approach to mainstreaming health in other Community policies, and to global health issues, and will define an effective implementation mechanism in close partnership with Member States. Secondly, an initiative on health services which will aim to improve legal certainty about the application of Community law on health services and support Member States in areas where EU action can add value to national action.

<sup>(171)</sup> Charter of Fundamental Rights of the European Union (Articles 31 (fair and just working conditions) and 35 (health care)).

<sup>(172)</sup> Amended proposal for a decision of the European Parliament and of the Council establishing a second programme of Community action in the field of health (2007-13), COM(2006) 234.

<sup>(173)</sup> See Commission legislative and work programme 2007, communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM (2006) 629.

## Main changes

**Table 6.1: Evaluation of changes in the public health theme (from 2000)** <sup>(174)</sup>

	EU-27	EU-15
<b>Healthy life-years at birth</b>	:	
<b>Health and health inequalities</b>		
Healthy life-years at age 65	:	
Death rate due to chronic diseases		
Suicide death rate		
<b>Determinants of health</b>		
Salmonellosis	*	
Toxic chemicals	:	
Overweight and obesity	:	:
Present smokers	:	:
Population exposure to particulate matter	*	
Population exposure to ozone	*	
Serious accidents at work	*	



**LEGEND:**

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available
- \* refers to EU-25

<sup>(174)</sup> Due to short time series, changes were evaluated from 1999 to 2003 for healthy life-years at birth and from 1999 to 2001 at age 65. Population exposure to particulate matter was evaluated from 2001 to 2004.

Many of the trends in this theme are positive, even if in some cases the changes will only appear favourable over the longer term. The expectancy of healthy life-years, at birth and at age 65, continues to increase slowly, albeit at a faster rate than life expectancy. As a result, people are not only living longer, but they are living a greater part of their lives unafflicted by serious health problems. Other positive signals are that fewer people are dying from chronic diseases, the suicide rate is falling, and fewer cases of salmonellosis are being reported. There is also a continuous reduction in the incidence of serious accidents at work. On a less positive note there are no discernible improvements in the exposure of the population to airborne pollution by particulate matter. In the case of ozone, although the change between 2000 and 2004 has been evaluated as unfavourable, the change relative to 1999 or 2001 would appear favourable. A clearly unfavourable trend is the ever-increasing quantity of toxic chemicals produced, although this is tempered by the fact that there is a shift away from the most toxic classes.

The expectancy at birth of the number of years to be lived in good health continues to grow, and at a faster rate than life expectancy, meaning that more of our children's lives will be lived free of serious disability. However, since the average annual increase remains below 1 % this trend is evaluated as showing little or no change. This is in contrast to the situation at age 65, which is assessed as favourable because the growth rates are above 1 % per year.

This improvement in health is reflected in the favourable trend of the death rate due to chronic diseases, which decreased by 2.0 % on average per year in the EU-27 and 2.2 % in the EU-15 between 2000 and 2004. There is also an improvement in mental health, as monitored by the suicide rate which decreased on average by 2.2 % per year in the EU-27, and 0.7 % in the EU-15 during the same period.

**We are living longer and healthier lives**



- Fewer cases of food poisoning** The risk of illness from the food we eat, as measured by the salmonellosis rate, has also fallen sharply across the EU, by nearly 7 % per year since 2000.
- But we continue to produce large quantities of toxic chemicals** The production of toxic chemicals continued to increase at approximately 1.3 % per year on average between 2000 and 2005, albeit at a slower rate than in the previous period when it grew by 3 % per year. There has also been a positive development in that there has been a shift away from the two most dangerous classes of toxic chemicals towards less harmful toxic chemicals.
- And many of us are overweight or smoke** Currently available Community health statistics do not make it possible to evaluate trends in the various lifestyle-related determinants of health, because of a change in data collection method. Nevertheless, data for the year 2003 on overweight and obesity and on current smokers are presented.
- Depending on the country, between 30 and 64 % of young males aged between 25 and 34 were overweight or obese in 2003 and between 12 and 47 % of young women. In this age group the proportion of overweight males is higher in all EU countries than that of overweight females. It seems that both sexes, and especially women, have a tendency to put on weight as they grow older. The proportion of over-65s who are overweight or obese is considerably higher, ranging from 62 to 80 %. The distinction between the sexes is in general much smaller for this age group, although in several countries women show more tendency to overweight than men.
- Gender differences are also apparent in smoking patterns. Although about 30 % of all adults across the EU smoked either daily or occasionally in 2003, this comprised 37 % of males, compared with 24 % of females. Of the EU population 26 % were regular smokers in 2003, comprising 32 % of males and 21 % of females.
- No clear trend in exposure to harmful pollutants** The level of exposure to air pollution by particulate matter was approximately the same in 2004 compared to 2001 for the EU-25, and was significantly higher in 2004 compared to 2000 for pollution by ozone. It is, however, difficult to discern clear trends in the exposure of urban populations to pollution by ozone and particulates due to the shortness of the time series available and the fluctuations from year to year.
- There is progress in reducing the numbers of serious accidents at work** Efforts to improve health and safety in the workplace are reflected in the 5 % annual fall in the incidence of serious accidents at work across the EU between 2000 and 2004. This rate of improvement is consistent with the target of a 25 % reduction over the period 2007 to 2012.

### Rationale for the selection of indicators

The indicators selected for this theme are derived from the objectives and targets described under the key challenge of public health in the renewed sustainable development strategy (Box 6.1).

### Box 6.1: Objectives related to public health in the renewed 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 coordinated manner.
- Further improving food and feed legislation, including review of food labelling.
- Continuing to promote high animal health and welfare standards in the EU and internationally.
- Curbing the increase in lifestyle-related and chronic diseases, particularly among socioeconomically disadvantaged groups and areas.
- Reducing health inequalities within and between 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, the 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.

The headline indicator for this theme is 'healthy life-years at birth by gender compared with life expectancy'. It is presented here along with the indicator of healthy life-years at age 65. These indicators are useful to examine questions concerning the length and quality of life to be expected by those being born as well as those on the verge of retirement.

The remaining indicators are arranged in two complementary subthemes:

- **Health and health inequalities:** This subtheme is intended to cover the objectives of the strategy related to health status, including mental health, and health inequalities. The healthy life-years indicators provide an overall picture of the quality and length of life. Lifestyle-related and chronic diseases are monitored by the death rate due to chronic diseases. These diseases include major causes of premature death such as cancer, stroke, heart disease, diabetes, chronic respiratory diseases and chronic liver diseases. Many cases of these diseases are lifestyle-related and preventable. In the longer run it is hoped that it will be possible to monitor their incidence rather than the death rate. Mental health is monitored within this subtheme by the suicide death rate and further indicators of mental health need to be developed. Although breakdowns of these indicators by age and gender are provided where possible, little else is currently available on health inequalities. Possible future indicators include an indicator on unmet needs for health care by income group, an indicator on childhood health, and an indicator on the regional disparities of death rates.
- **Determinants of health:** This subtheme is intended to cover the objectives of the strategy related to the causes of poor health, including lifestyle, food safety, toxic chemicals and environmental pollution. Changing trends in the indicators of this second subtheme to a large extent determine the future state of health reflected in the indicators of the first subtheme. For this edition the issue of food-safety is covered by the salmonellosis incidence rate, which is a proxy for an indicator to be developed on deaths due to infectious food-borne diseases. Additional indicators need to be developed on dioxins and PCBs in food and feed; and pesticide residues in food. An indicator on heavy metals, and mercury in particular, in fish and shellfish, is under development for the natural resources theme, and is also relevant here. The potential threat due to toxic chemicals is currently monitored by an index of production of toxic chemicals by toxicity class. This indicator will eventually be replaced by one on the apparent consumption of toxic chemicals. The indicator on consumption of certain food stuffs, presented in the chapter on sustainable



consumption and production is also an important determinant of health. Lifestyle factors are represented here by indicators on overweight and smoking. Unfortunately, while EU health statistics are being developed and improved, it is not possible to show a time series of either of these indicators and only one year is shown. For similar reasons it has not been possible to provide an update for this edition of the indicator on the proportion of the population living in households who consider that they suffer from noise. The evolution of this indicator up to the year 2000 was published in the 2005 edition. However, indicators on urban population exposure to particulates and ozone have been included. An indicator on the monetary damage of air pollution has also been proposed but is not sufficiently developed to include at this stage. The issue of health and safety at work is monitored by an indicator on serious accidents at work. A further indicator is to be developed on work with a high level of strain or stress.

### Potential linkages

#### Linkages within public health

Health contributes to the quality of life and well-being, and human health is fundamental to sustainable development. As mentioned previously, the two subthemes are complementary and there is a causal link between them. Although genetic factors are very significant, lifestyle and environmental factors exert major influences on the state of health. Diet and physical activity influence whether a person is overweight or not. And being overweight or obese, together with dietary, smoking and drinking habits, contribute to the risk of developing chronic diseases.

#### Linkages with the economic dimension

Health is strongly linked to economic development. A healthy and fit population can be assumed to be more productive than one which is unhealthy and unfit. And ill health is a financial burden on public health and long-term care systems. On the other hand, better health care can result in greater numbers of elderly persons who are economically dependent on the working-age population.

Economic development is also influenced by health-related industries, such as the pharmaceutical industry, which contribute considerably to national income. Other industries may use toxic chemicals, which pose a risk to workers and the public alike. Industry is also responsible for the emission of harmful pollutants to the air and water. And industry creates a demand for transport, which in turn leads to more emissions.

#### Linkages with the social dimension

<sup>(175)</sup> Mackenbach, J.P.  
*Health inequalities: Europe in Profile*, report commissioned by the UK Council Presidency, 2006.

There are links between health and social inclusion. Most major health problems, and important causes of premature death such as chronic diseases, are more frequent among those with lower educational levels, income and occupational status <sup>(175)</sup>. Inequalities and disparities in health exist between the sexes, between age groups (particularly with respect to the very young and very old), between socioeconomic groups, between countries, and between regions within countries. The poor may have less access to health services and less means to adopt healthy lifestyles. Poverty influences the standard of housing available. Lack of adequate heating, leaky roofs, and proximity to sources of noise and pollution can all influence health.

#### Linkages with the environmental dimension

Health is also influenced by the food we eat. Meat, fish, fruit, grains and vegetables have their own respective contributions to make. However, it is not only the nutritional quality of what we eat, but also the possible presence of harmful residues present in what we consume. Emissions from industry and transport are deposited on vegetation eaten by livestock or on crops which are for human consumption. Water-borne emissions end up in fish and shellfish. Pharmaceutical products and pesticides used in agriculture may find their way into food consumed by humans.

Air pollution has also a direct impact on health as described in the indicators on exposure to air pollutants in this theme.

It is also important to consider the possible implications of climate change. Ozone formation is dependent on the presence in the air of certain precursors, high temperatures and sunlight. The emissions of ozone precursors are in turn influenced by high temperatures and sunlight. Forest fires, which are especially linked to hot, dry periods, result in particulate emissions. Heatwaves are linked to premature deaths, especially of the young and elderly. Salmonellosis, botulism and other food-borne diseases are more prevalent at higher temperatures. Shifts in climatic zones will also influence the ranges of insect-borne diseases.

Imports of products from developing countries may have impacts on health through food-borne diseases, or less strict environmental standards.

Linkages with  
climate change

Linkages with  
global partnership

#### Further reading on public health in Europe

'Health in Europe — Data 1998-2003', *Statistical pocketbook* 2005 edition, Eurostat

*European social statistics - Demography*, 2004 edition, Eurostat

Byrne, D. *Enabling good health for all: A reflection process for a new EU health strategy*, European Commission, 2004

Green Paper — Towards a Europe free from tobacco smoke: policy options at EU level, COM(2007) 27

*Attitudes towards alcohol*, Eurobarometer Special Report (March 2007), European Commission

Green Paper, Improving the mental health of the population. Towards a strategy on mental health for the European Union, COM(2005) 484

Green Paper, Promoting healthy diets and physical activity: a European dimension for the prevention of overweight, obesity and chronic diseases, COM(2005) 637

*Healthy ageing: Keystone for a sustainable Europe*, Discussion Paper of Directorates-General for Health and Consumer Protection, Economic and Financial Affairs, and Employment, Social Affairs and Equal Opportunities

Programme for Community action in the field of health 2007-2013, COM(2006) 234

Mackenbach, J.P. *Health inequalities: Europe in profile*, report commissioned by the UK Council Presidency, 2006



## Headline indicator



## Healthy life-years and life expectancy

**Definition:** 'Healthy life-years' is defined as the **number of years that a person is expected to continue to live in a healthy condition**. It is compiled separately for males and females, at birth and at age 65. 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. The indicator is also called disability-free life expectancy.



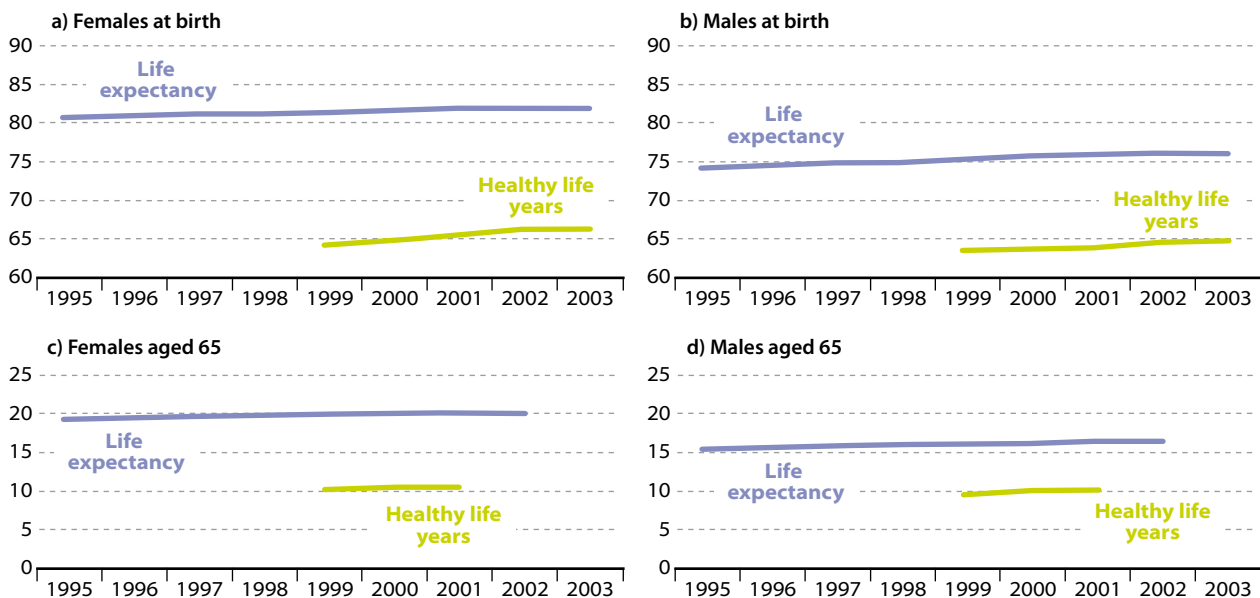
Life expectancy is defined as the **mean number of years still to be lived by a person who has reached a certain exact age**, if subjected throughout the rest of his or her life to the current mortality conditions.

## Indicator relevance

The indicator combines information on both the quality and length of life, for newly born and elderly populations. It therefore reflects an emphasis that has shifted from measuring health simply in terms of longevity to one which also considers well-being. An improvement in healthy life-years is considered as one of the main health goals for the EU.

'Healthy life-years' is not shown here at national level because cultural differences lead to biases in the data and possible misinterpretation. The indicator is, however, sufficiently robust to provide reliable information on the evolution at EU level over time.

Figure 6.1: EU-15 healthy life-years and life expectancy by age and gender (years)



NB: 2002-2003: Eurostat estimates.

Source: Eurostat.





## Analysis

EU-15 life expectancies at birth grew at the annual average rates of 0.2 % for females and 0.3 % for males over the period 1995 to 2003, reaching 81.6 years for females and 75.8 years for males in 2003. As a result of the faster growth in male life expectancy, the gap of 6.5 years between females and males in 1995 has closed slightly to reach 5.8 years in 2003. The growth rates at age 65 were somewhat higher, representing 0.6 % on average for females and 0.9 % for males, over the period 1995 to 2002. The gap between females and males closing by 0.2 years over this period, to reach 3.6 years in 2002.

Healthy life-years are growing faster than life expectancy, for both males and females, at birth as well as at age 65. At birth, healthy life-years grew at 0.8 % per year on average for females, compared with 0.5 % for males over the period 1999 to 2003. At age 65, the average annual growth rates were 1.5 % for females and 2.6 % for males over the period 1999 to 2002.

The overall result is longer lives, with more healthy years. In 2003, newborn girls could be expected to live 66 years free of disability and boys 64½ years. In 2002, by the age of 65, men and women could expect to live about a further 10 more years on average in good health.



## Health and health inequalities

## Death rate due to chronic diseases

**Definition:** The indicator is defined as the **standardised death rate of certain chronic diseases**, by gender and age group. The following diseases have been considered: malignant neoplasms, diabetes mellitus, ischaemic heart diseases, cerebrovascular diseases, chronic lower respiratory diseases, and chronic liver diseases.

As the incidence of chronic diseases varies significantly with age and sex, the indicator is expressed using age-standardised rates which improve comparability over time and between countries, as they adjust raw incidence rates according to a standard European age structure.

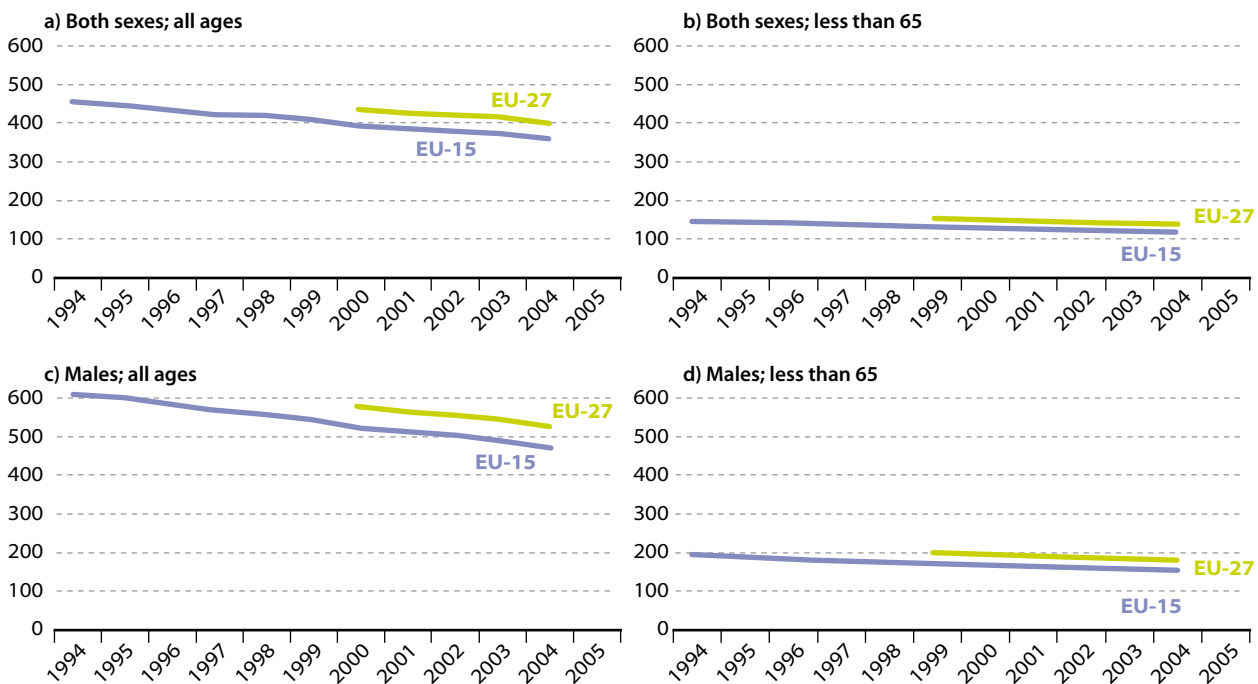


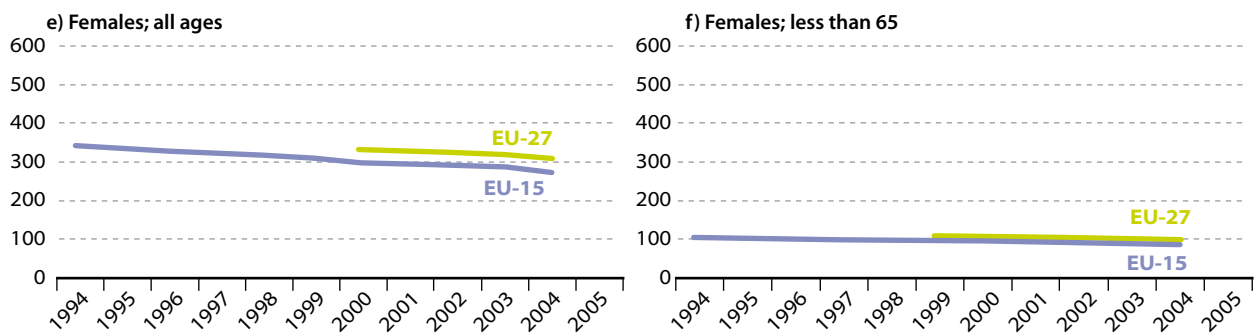
## Indicator relevance

'Curbing the increase in lifestyle-related and chronic diseases' is an objective of the revised sustainable development strategy, and, according to Eurostat figures, for the population of the EU as a whole, nearly 60 % of all deaths are due to the diseases included in this indicator. Many cases are caused or exacerbated by a small number of risk factors: smoking, obesity, lack of physical activity, poor diet (high intake of sugars and saturated fats and low intake of complex polysaccharides and unsaturated fats), and alcohol consumption. This high mortality, combined with the fact that many cases of these diseases are preventable, has led to increased efforts at both national and Community level to reduce their incidence by promoting healthier lifestyles.

There are also economic consequences in terms both of the cost of medical care and in the lost productivity.

Figure 6.2: Standardised death rate due to chronic diseases by gender and age group (per 100 000 persons)





Source: Eurostat.

The important message from this indicator is that deaths due to chronic diseases are falling, for men and women, in the EU-27 as in the EU-15, and for the under-65s as well as for all ages. For the EU-15 the death rate fell by about 2.3 % per year on average from 1994 to 2000, and by about 2.2 % per year from 2000 to 2004 for all ages, with very similar rates for under-65s. The death rates for these diseases as a whole are slightly higher in EU-27 than in EU-15, due to higher death rates for ischaemic heart disease, cerebrovascular disease and chronic liver disease in some of the newer Member States. For the EU-27, the death rate fell by about 2.0 % per year from 2000 to 2004 for all ages, and by 2.1 % for under-65s.

### Analysis

As a general observation, it is not surprising that the death rate due to chronic diseases is much higher for the population over 65 than for younger people, as is the case for the death rate in general. This is reflected in the very much higher figures for all ages as compared with under-65s. Nevertheless, for both age groups, chronic diseases represent slightly below 60 % of all deaths in both the EU-27 and the EU-15. Females also tend to have lower death rates due to chronic diseases than males, although the gap for under-65s is narrower.



## Health and health inequalities

## Suicide death rate

**Definition:** The indicator is defined as the **standardised death rate from suicide and intentional self-harm** per 100 000 people, by gender. Standardised rates are adjusted rates that enable comparisons between countries and between the genders, using a 'standard' population that is structured by age in the 'region of Europe' as defined by WHO.

Figures should be interpreted with care as suicide registration methods vary between countries and over time. Moreover, the figures do not include deaths from events of undetermined intent (part of which should be considered as suicides) and attempted suicides which did not result in death.

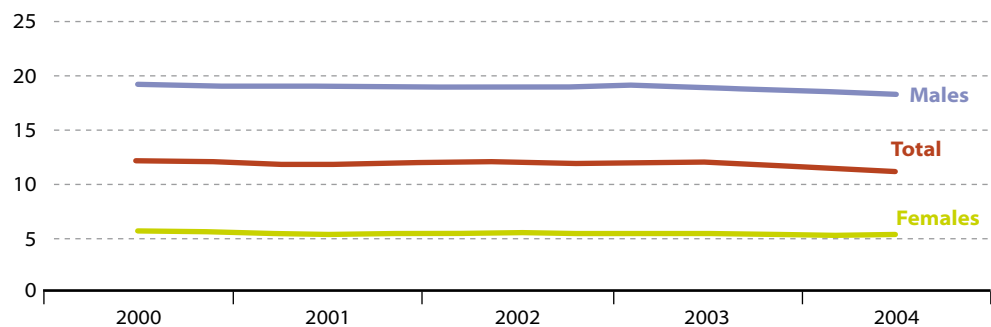


## Indicator relevance

One of the objectives of the renewed sustainable development strategy is 'improving mental health and tackling suicide risks'. Suicide is the major cause of death after chronic diseases (see indicator on 'death rate due to chronic diseases'), having become more important in the population as a whole than deaths due to transport accidents (see indicator on 'people killed in road accidents' in the transport chapter). Among adolescents and young people it is the second cause of death after transport accidents. The suicide death rate is therefore an important indicator of mental health. Moreover, suicide concerns mainly young adults and older people. Hence, with an ageing population this cause of death has become a major public health concern.

**Figure 6.3:**  
EU-27  
standardised  
suicide death rate  
by gender (per  
100 000 persons)

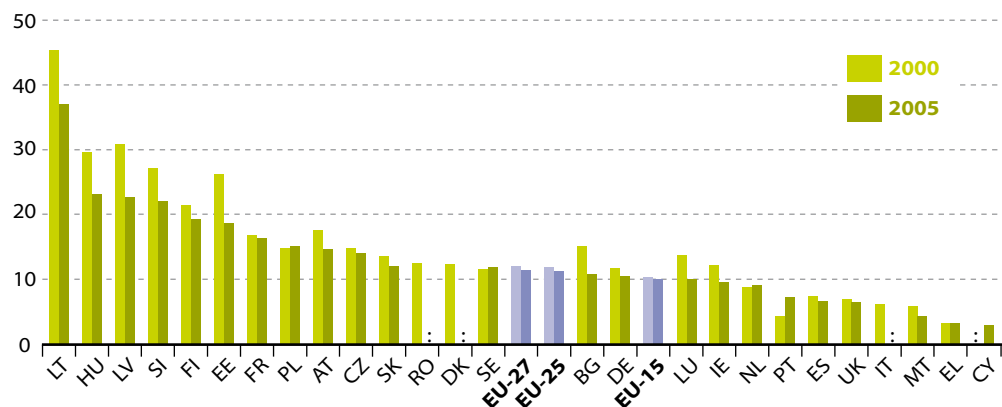
Source: Eurostat.



**Figure 6.4:**  
Standardised  
suicide death rate  
by country  
(per 100 000  
persons)

NB: Missing values, as opposed to real zero, are shown by ':'. For Finland, France, Czech Republic, Sweden, EU-27, EU-25 and EU-15, 2004 values are used instead of 2005, which are not available.

Source: Eurostat.





## Analysis

Suicide death rates in the total population have fallen in the EU-27 from 11.9 in 2000 to 12.9 per 100 000 in 2004, representing a 2.2 % average annual decrease. For males, the level has fallen from 19.1 in 2000 to 18.1 in 2004, whilst at the considerably lower level of 5.4 in 2000 for females it has fallen to 5.0.

Several countries (Lithuania, Latvia, Estonia, Hungary, Slovenia, Bulgaria and Luxembourg) show substantial falls in suicides over the period 2000 to 2005, although in some of them, rates still remain high. Others (Austria, Ireland, Finland, Malta, Slovakia, Germany, Czech Republic, Spain) have made more modest progress. The remainder, with the exception of Portugal, show a relative stability. No recent data are available for Belgium.

In absolute terms, there is a geographical pattern to the statistics on death by suicide. The lowest rates in 2005 (about three deaths per 100 000) were reported by Cyprus and Greece. Malta, Italy, Spain and Portugal also report low levels of suicide. At the other end of the scale, the Baltic States tend to register much higher suicide rates, with Lithuania reporting 37 suicides per 100 000 in 2005. It should be borne in mind that some of the differences between countries are due to different cultural attitudes to suicide, which may lead to under-reporting.



## Determinants of health

## Salmonellosis incidence rate

**Definition:** The indicator is defined as the **number of reported new cases of salmonellosis per 100 000 persons**.



## Indicator relevance

<sup>(176)</sup> Directive 2003/99/EC of the European Parliament and of the Council on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC.

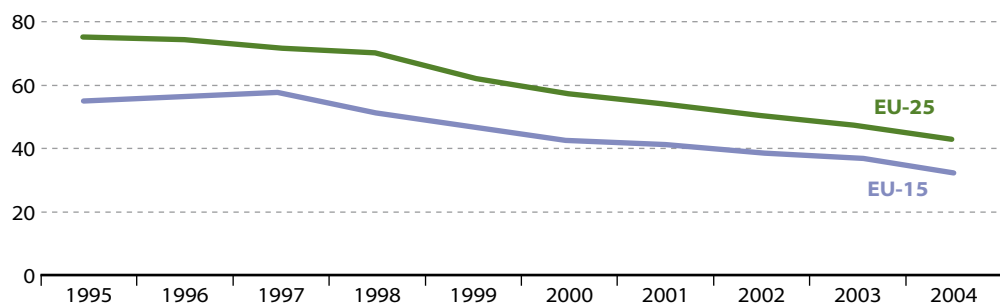
<sup>(177)</sup> Regulation (EC) No 2160/2003 of the European Parliament and of the Council on the control of salmonella and other specified food-borne zoonotic agents.

Salmonellosis is a food-borne illness caused by the *Salmonella* bacterium which infects the digestive system. It is usually transmitted to humans by contaminated meat, eggs or milk from animals which have been given feeding stuffs contaminated with animal faeces. Serious infections can result in death. Salmonellosis is one of the most prevalent of the food-borne diseases in Europe and the indicator is used here as a proxy for infectious food-borne diseases in general.

Salmonellosis is one of eight diseases transmissible between animals and man, which it is mandatory to monitor continuously under the zoonoses monitoring directive<sup>(176)</sup>, and the control of *Salmonella* at all stages of the food production and distribution chain is the subject of the zoonosis control regulation<sup>(177)</sup>.

**Figure 6.5:**  
Salmonellosis incidence rate  
(number of new cases per 100 000 persons)

Source: Eurostat.



## Analysis

Human salmonellosis is on the decline across Europe, although with more than 42 cases reported per 100 000 persons in the EU-25 in 2004, salmonellosis remains a major cause of morbidity.

Between 1995 and 2000 the salmonellosis incidence rate fell by 5.5 % per year on average in the EU-25, compared with 5.2 % in the EU-15, with sharper decreases since 1997/8. Since 2000 it has decreased by 6.9 % per year on average in the EU-25, and 6.7 % in the EU-15.

## Production of toxic chemicals



**Definition:** This indicator represents the **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.

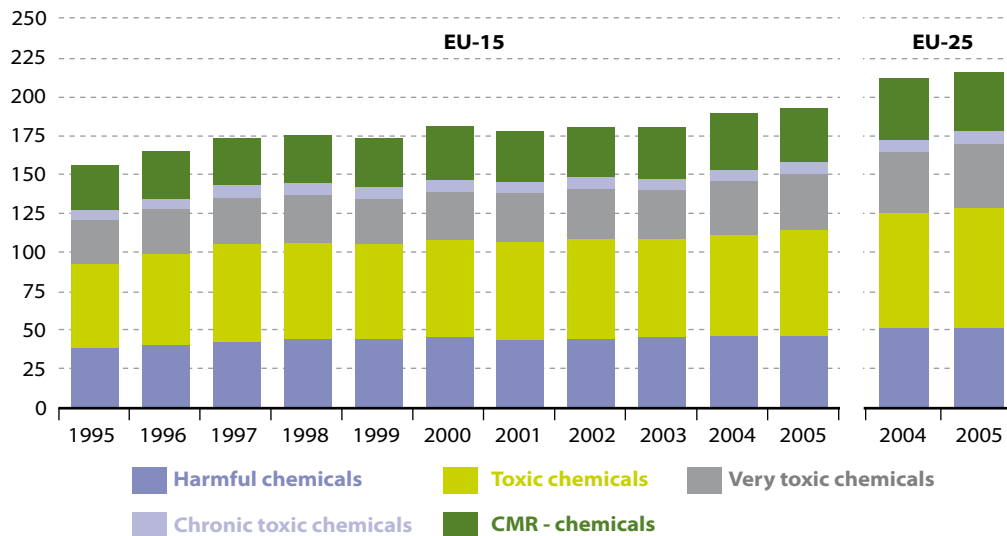
An objective of the renewed sustainable development strategy is to ensure 'that by 2020 chemicals, including pesticides, are produced, handled and used in ways that do not pose significant threats to human health and the environment ... , the aim being to eventually replace substances of very high concern by suitable alternative substances or technologies.' In this context, the recent adoption of the regulation for the registration, evaluation, authorisation and restriction of chemicals (REACH)<sup>(178)</sup> represents an important milestone. Proposals for a regulation on the placing of plant protection products on the market<sup>(179)</sup> and for a framework directive on the sustainable use of pesticides<sup>(180)</sup>, were adopted by the Commission in 2006 and are currently under discussion in the European Parliament and the Council. Adoption and implementation of these proposals will lead to substantial progress in reducing risks from pesticides production and use.

### Indicator relevance

<sup>(178)</sup> Regulation (EC) No 1907/2006 concerning the registration, evaluation, authorisation and restriction of chemicals (REACH), establishing a European Chemicals Agency.

<sup>(179)</sup> Proposal for a regulation of the European Parliament and of the Council concerning the placing of plant protection products on the market, COM(2006) 388.

<sup>(180)</sup> Proposal for a directive of the European Parliament and of the Council establishing a framework for Community action to achieve a sustainable use of pesticides, COM(2006) 373.



**Figure 6.6:**  
Production of toxic chemicals, by toxicity class (million tonnes per year)

Source: Eurostat.

Over the period 1995 to 2000, EU-15 production of total toxic chemicals grew at the average rate of 3 % per year, the strongest growth being in the most toxic classes (4 % for chronic toxic chemicals and 3.8 % for CMR chemicals). Since 2000, the average annual growth rate for total toxic chemicals has fallen to 1.3 % per year. There has also been a shift away from the most toxic chemicals and the strongest growth has been in the very toxic chemicals (3.3 % per year on average) and toxic chemicals (1.9 %). The production of chronic toxic chemicals decreased by 1.3 % per year and that of CMR chemicals grew by only 0.2 % per year.

Although in absolute terms EU-25 figures are of course higher than those of the EU-15, the distribution between the different toxicity classes is very similar.

### Analysis



## Determinants of health

## Overweight and obesity

**Definition:** The indicator is defined as the **percentage of overweight people**. Overweight people are those with a body mass index (BMI) greater than or equal to 25. This includes people who are severely overweight ('obese'), having a BMI greater than or equal to 30.

The BMI is a measure of the body fat content of adults and is calculated as the ratio between the weight measured in kilograms, and the square of the height measured in metres.



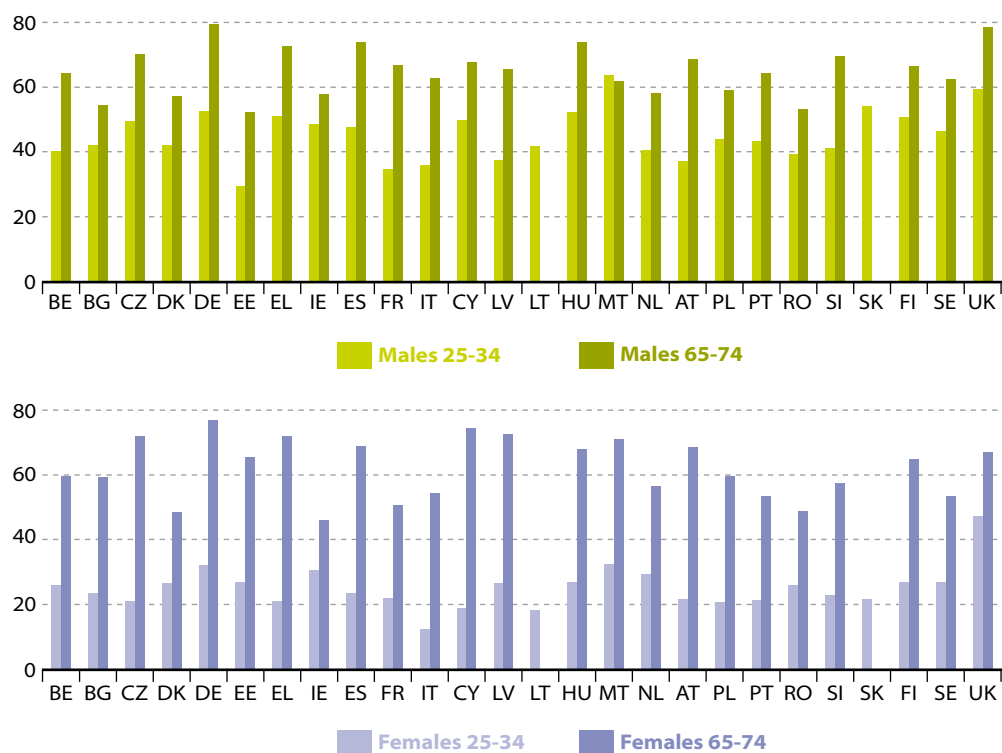
## Indicator relevance

Being overweight is an important public health problem, affecting all income and age groups. Apart from genetic predisposition (e.g. in the case of underactive thyroid), the condition results from an imbalance between diet and activity. Overweight children are of particular concern, because when unhealthy nutritional habits and a sedentary lifestyle are maintained over years the result is obesity. And obesity is one of the most serious risks to health in Europe, being linked to diabetes, hypertension, heart disease and cancer. Lesser, but also debilitating, problems associated with overweight are osteoarthritis, hernia and problems with the main weight-bearing joints, particularly the hips and knees. According to the Green Paper on promoting healthy diets and physical activity<sup>(181)</sup>, obesity accounts for up to 7 % of EU health care costs. Tackling overweight and obesity therefore is not only important in public health terms, but will also reduce the long-term costs to health services and stabilise economies by enabling citizens to lead productive lives well into old age.

<sup>(181)</sup> Promoting healthy diets and physical activity: a European dimension for the prevention of overweight, obesity and chronic diseases, COM(2005) 637.

**Figure 6.7:**  
Percentage of overweight people in 2003, by gender and age group (%)

Source: Eurostat.





There are differences in the pattern of obesity between males and females, between younger and older persons, and between countries. Depending on the country, between 30 and 64 % of young males are overweight, compared with between 12 and 47 % of young females. In the older age group, the proportion of those who are overweight or obese ranges from 62 to 80 % according to the country, with much less difference between men and women than is apparent in the younger age group. Whilst both older men and older women show a considerably higher tendency to be overweight than their younger counterparts, the increase in the proportion of overweight women as they get older is striking. Whereas in the younger age group the incidence of obesity in men exceeds that in women in all countries, for the older age group there are at least half a dozen countries where women show a greater tendency to obesity than men.

## Analysis



## Determinants of health

## Present smokers

**Definition:** The indicator is defined as the **percentage of current tobacco smokers out of the total population**. A person is a present smoker if he/she declares that they smoke tobacco daily or occasionally.



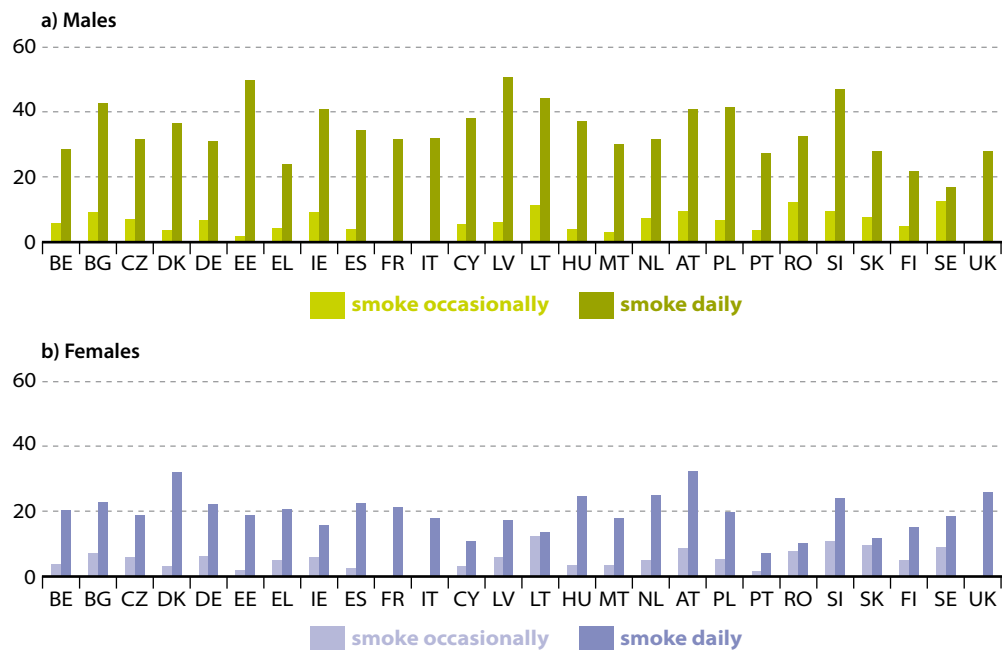
## Indicator relevance

Tobacco use is a major risk factor for diseases of the heart and blood vessels, chronic bronchitis, emphysema and lung cancer, and remains the leading avoidable cause of death and disease in our society. According to the Green Paper 'Towards a Europe free from tobacco smoke'<sup>(182)</sup> it is responsible for the deaths of 650 000 smokers per year in the EU, and a further 79 000 deaths by passive smoking. The fight against tobacco is thus of importance and continues to be on the EU public health agenda. An increasing number of Member States have banned smoking in public buildings.

<sup>(182)</sup> Towards a Europe free from tobacco smoke: policy options at EU level, COM(2007) 27.

**Figure 6.8: Present smokers in 2003, by gender (%)**

Source: Eurostat.



## Analysis

In 2003, the last year for which data are currently available, on average about 30 % of all adults across the EU smoked either daily or occasionally. Of these the majority, representing 26 % of all adults, are daily smokers.

Although in Sweden, the UK and Denmark, there are roughly equal proportions of male and female daily smokers, in other countries males greatly outnumber females. This disparity between the sexes is most striking in Portugal, where approximately four times as many males are regular smokers than females. But substantial gender differences in smoking habits also exist in Cyprus, Lithuania and Latvia (all over three times more men than women), as well as in Estonia, Greece, Slovakia, Poland and Slovenia (all with more than twice the numbers of males than females). On average, nearly 40 % of males and 25 % of females smoked either daily or occasionally, with 32 % of men and 21 % of women being daily smokers.

## Population exposure to air pollution by particulate matter

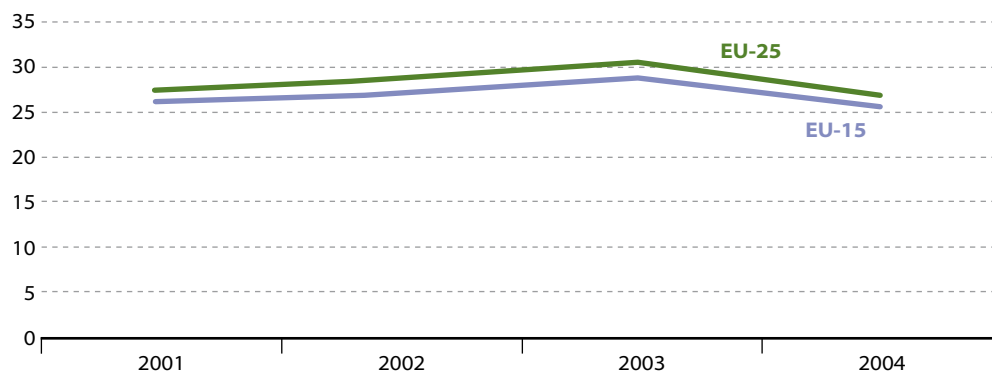


**Definition:** The indicator is defined as the **population-weighted annual mean concentration of particulate matter at urban background stations.**

Particulate matter consists of fine solid or liquid particles suspended in the air. The size, chemical composition and toxicity of particles vary considerably and depend on the source, ambient conditions and mechanism of their formation. PM10 comprises particles of less than 10 µm in diameter, and the finer fraction is able to penetrate deep into human lungs where it is thought to do most damage. Natural sources include dust and sand, volcanic ash and smoke from forest fires. The major human source is combustion, either in industrial plants, power-stations and open fires, or from internal combustion engines. Less important sources are wind-blown dust from construction sites and other disturbed land, and wear and tear, e.g. of road surfaces, vehicle tyres and brake linings. Secondary PM10 precursors are pollutants that are not emitted as particulates but are transformed into particulates in the atmosphere.

Over the last decade and a half a number of epidemiological and toxicological studies <sup>(183)</sup> have indicated that there is an association between long and short-term exposure to fine particulate matter and health. However, given the complex chemistry and physical characteristics of particulates, and the difficulties in isolating the effects of particulates from other potential causes, there is also much contradictory evidence and uncertainty associated with these results.

The air quality framework directive <sup>(184)</sup> describes the basic principles for the assessment and management of air quality. The first daughter directive <sup>(185)</sup> set 24-hour and annual limit values for PM10 in ambient air. The annual limit value to be achieved by 2005 was set at 40 micrograms of PM10 per cubic metre, to fall to 20 micrograms by 2010.



### Indicator relevance

<sup>(183)</sup> The current state of knowledge is summarised in Samet, J.M., Brauer, M., and Schlesinger, R.: *Particulate matter*, Chapter 10 of *Air quality guidelines. Global update 2005. Particulate matter, ozone, nitrogen dioxide and sulphur dioxide*, World Health Organization 2006.

<sup>(184)</sup> Council Directive 96/62/EC on ambient air quality assessment and management.

<sup>(185)</sup> Council Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air.

**Figure 6.9: Urban population exposure to air pollution by particulate matter (micrograms per cubic metre)**

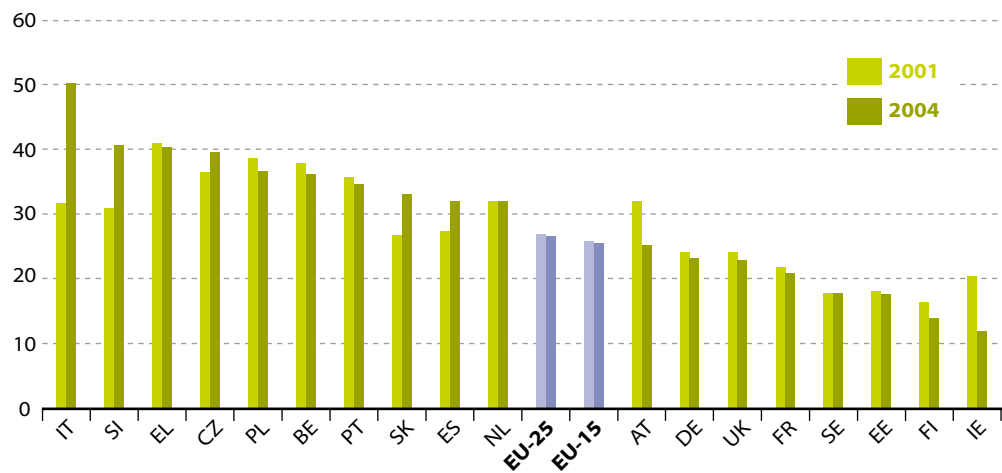
Source: European Environment Agency.



**Figure 6.10:**  
Urban population  
exposure to  
air pollution  
by particulate  
matter, by country  
(micrograms per  
cubic metre)

NB: For Slovenia the 2002 value is used in place of 2001 which is not available.

Source: European Environment Agency.



### Analysis

<sup>(186)</sup> Hodzic A., Madronich, S., Bohn, B., Massie, S., Menut, L., and Wiedinmyer, C.: 'Wildfire particulate matter in Europe during summer 2003: meso-scale modelling of smoke emissions, transport and radiative effects', *Atmos. Chem. Phys. Discuss.*, 7, 4705–4760, 2007.

On average, the urban population exposure to fine particulates fell by 0.4 % per year across the EU-25 and EU-15 between 2001 and 2004. The higher levels of exposure during 2003 at least partly result from the severe heatwave during the summer of 2003, which led to extremely hot and dry weather conditions and stagnant air in which pollutants accumulated. Associated with this were a large number of wildfires in south-west Europe, especially in Portugal, southern France, Italy and the eastern Adriatic coast. The particulates resulting from these fires were transported across the Atlantic, over the British Isles, and then through Belgium, the Netherlands, Luxembourg, France and Germany, then heading southwards through Italy and the Balkans <sup>(186)</sup>.

Urban exposure to particulates varies from country to country. Apart from sporadic forest fires, another unpredictable factor is dust blown across the Mediterranean from North Africa. This phenomenon is most strongly felt in Greece and other Member States bordering the Mediterranean.

## Population exposure to air pollution by ozone



**Definition:** The indicator is defined as the **population-weighted yearly sum of maximum daily 8-hour mean ozone concentrations above the threshold** of 70 micrograms of ozone per cubic metre at urban background stations.

Ozone is a highly reactive gas, damaging to living tissues. Exposure to high concentrations can provoke inflammatory responses and respiratory problems in humans. It is a 'secondary' pollutant, not directly emitted, but resulting from reactions between nitrogen oxides, carbon monoxide and volatile organic compounds (VOCs) in the presence of sunlight. These precursors arise from human activities (mainly transport and industry), and VOCs are also emitted from vegetation. Although emissions of ozone precursors from anthropogenic sources have decreased dramatically over the last decade (for example, see the indicator 'emissions of ozone precursors from transport' in the transport chapter), high summer temperatures lead to higher emissions. In the case of nitrogen oxides, higher engine temperatures of road vehicles result in higher emissions. In the case of VOCs, high ambient temperatures result in increased evaporative emissions, as well as increased emissions from plants — an effect which is reinforced by strong sunlight.

The air quality framework directive <sup>(187)</sup> describes the basic principles for the assessment and management of air quality. The third daughter directive <sup>(188)</sup> established a 2010 target value for the maximum daily eight-hour mean not to exceed 120 µg/m<sup>3</sup> on more than 25 days per calendar year averaged over three years, with the long-term objective for 2020 of not exceeding a maximum daily eight-hour mean of 120 µg/m<sup>3</sup>.

### Indicator relevance

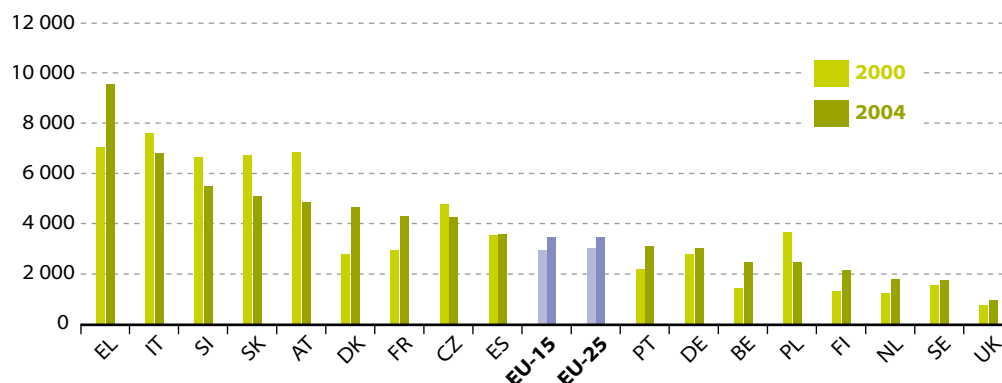
<sup>(187)</sup> Council Directive 96/62/EC, op. cit.

<sup>(188)</sup> Directive 2002/3/EC of the European Parliament and of the Council relating to ozone in ambient air.



**Figure 6.11: EU-25 urban population exposure to air pollution by ozone (micrograms per cubic metre day)**

Source: Eurostat.



**Figure 6.12: Urban population exposure to air pollution by ozone by country (micrograms per cubic metre day)**

NB: For Denmark the 1999 value is used in place of 2000 which is not available.

Source: Eurostat.



## Analysis

<sup>(189)</sup> See for example: 'Impact sanitaire de la vague de chaleur en France survenue en août 2003'. Paris, Institut de Veille Sanitaire. Johnson H., Kovats, S., McGregor, G., Stedman, J., Gibbs, M., Walton, H.. 'The impact of the 2003 heatwave on daily mortality in England and Wales and the use of rapid weekly mortality estimates'. *Euro Surveill* 2005;10(7):168-171.

With the exception of 2003, EU-25 urban exposure to ozone fluctuated between 3 000 and 4 000 micrograms per cubic metre day between 1999 and 2004. Even if the level in 2004 was higher than that of 2000, it was lower than the levels of 1999 and 2001, and it is not possible to discern a clear trend over time.

The year 2003 stands out as exceptional. The prolonged heatwave over most of western and central Europe during that summer led to unusually high ozone formation and population exposure. Thousands of people died prematurely as a result, especially the elderly, and exposure to ozone and particulates was implicated <sup>(189)</sup>.

Urban exposure to ozone varies widely between countries, and important factors are climate and vegetation. Greece and Italy showed the highest exposure, whilst the lowest levels were shown in the more northerly countries, such as the UK, Sweden, the Netherlands and Finland.

## Serious accidents at work

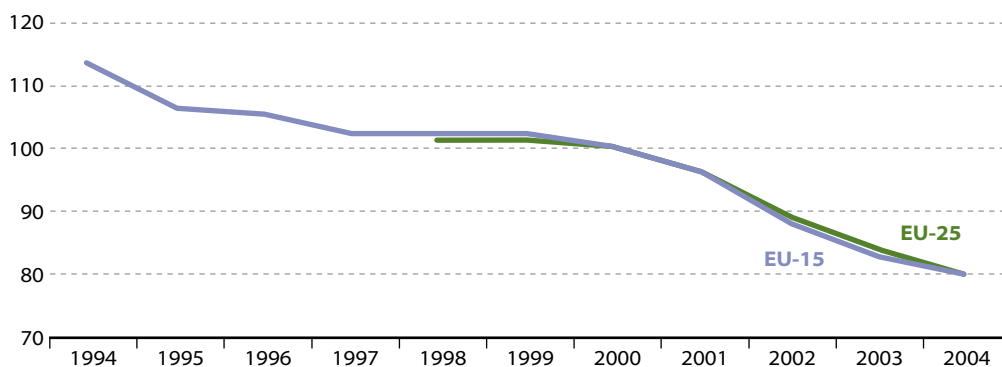


**Definition:** This indicator is defined as the **incidence rate of serious accidents at work**, which is the number of accidents at work resulting in more than three days' absence per 100 000 persons in employment.

The overall objective of the Community strategy 2007-2012 on health and safety at work is to reduce by 25 % the total incidence rate of accidents at work per 100 000 workers in the EU-27 over this period <sup>(190)</sup>. Under the Lisbon strategy, the Member States have acknowledged the major contribution that guaranteeing quality and productivity at work can play in promoting economic growth and employment. Indeed, the lack of effective protection to ensure health and safety at work can result in absenteeism, in the wake of workplace accidents and occupational illnesses, and can lead to permanent occupational disability. This not only has a considerable human dimension but also has a major negative impact on the economy. The high economic costs of problems associated with health and safety at work inhibits economic growth and affects the competitiveness of businesses in the EU. A considerable share of these costs also falls upon social security systems and public finances.

### Indicator relevance

<sup>(190)</sup> Improving quality and productivity at work – Community strategy 2007-2012 on health and safety at work, COM(2007) 62.



**Figure 6.13:** Number of serious accidents at work per 100 000 persons in employment (index 2000 = 100)

Source: Eurostat.

Between 1994 and 2000, the incidence of serious accidents at work in the EU-15 fell by about 2.2 percentage points per year on average. Since 2000, the number of accidents has decreased at the faster rate of 5 percentage points per year across the EU-15 and EU-25. Although these are substantial reductions, it should be borne in mind that the absolute figures remain high with nearly 4 million serious accidents at work occurring in the EU-15 in 2004. The recent higher rate of decrease is consistent with the target of a 25 % reduction over the period 2007 to 2012.

### Analysis



## Methodological notes

### Healthy life-years (HLY)

The indicator is calculated following the widely used Sullivan method<sup>(191)</sup>. It is based on prevalence measures of the age-specific proportion of population with and without disabilities and on mortality data. Its interest lies in its simplicity, the availability of its basic data and its independence of the size and age structure of the population. Nevertheless, cultural differences in reporting disability can influence the indicator.

For 1995-2001, for the EU-15 Member States, the source was the European Community household panel (see Box 3.3: The European Community household panel – ECHP - in the poverty and social exclusion chapter), whose question on limitation in daily activities by any physical or mental health problem, illness or disability represents the basis for calculating the indicator. The data for the new Member States, when available, cannot be considered to be fully comparable either between themselves or with the EU-15, due to differences in the underlying data sources. From the reference year 2004 onwards, the Community statistics on income and living conditions (EU-SILC) will be used, in which the 'unhealthy' condition is defined by the limitation in people's normal activities because of health problems for at least the previous six months.

Accuracy is good even if there are some general restrictions.

Institutional households are not included in the ECHP itself. However, it is assumed that the population living in the private households covered by ECHP is representative of the total population.

Results for the period 1995-2001 are comparable and the extrapolation over 2002 and 2003 ensures a similar comparability for the estimated values for these two years. Actually, the restrictions on the comparability across countries apply on the 'level' of the healthy life-years but not on its evolution. Due to transition between end-ECHP and start-EU-SILC, there will be disruptions in series between 2003 and 2005, the extent to be examined once the data have become available.

### 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*<sup>(192)</sup>. 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).

Both total numbers and crude death rates are influenced by the population structure: in a relatively 'old' population, there will be more deaths than in a 'young' one because mortality is higher in higher age groups. Standardised death rates (SDRs) take into account differences in population structure by using a European standard population. SDRs therefore allow direct comparisons between countries.

### Suicide death rate

Suicide mortality statistics are collected under the international classification of diseases and related health problems group 'suicide and intentional self harm' (ICD-10 codes X60-X84).

Procedures for recording a death as a suicide are not uniform and some of the variations in suicide across Europe may be due to differences in the process of death registration. Some countries (e.g. Luxembourg) require a suicide note in order to register a death as suicide, while in the United Kingdom an assessment of intent is required by a coroner. Cultural and social norms also play a role in death registration. Furthermore, in some cases (e.g. poisoning, especially drug overdose, asphyxiation, falling, drowning, traffic collisions) it may not be possible to determine whether the death was intentional or accidental. Such deaths, some of which may be suicides, are reported as of undetermined intent rather than as suicides. Moreover, trends in suicide can be influenced by changes in attitudes towards the registration of deaths which occur over time within a country.

### Salmonellosis

Data on salmonellosis incidence are collected from statutory and non-statutory systems of surveillance systems in each Member State. Age-standardised incidence rates are calculated to allow comparisons between countries since they take into account differences in population structure between countries in using a standard population.

The figures should be interpreted with care since it is likely that many food infections are unrecorded.

### Index of production of chemicals by toxicity class

The indicator is compiled for 168 toxic chemicals using production quantities collected pursuant to the Prodcom regulation (Council Regulation (EEC) No 3924/91 on the establishment of a Community survey of industrial production). The toxicity classes have been assigned according to the classification and labelling system ('risk phrases' or R-phrases) designated for the individual

<sup>(191)</sup> Sullivan, D.F. (1971). A single index of mortality and morbidity. HSMHA Health Reports, 86:347-354.

<sup>(192)</sup> *Demographic statistics: Definitions and methods of collection in 31 European countries*, Eurostat, 2003.



substances in Annex VI to the dangerous substances directive as amended by Commission Directive 2001/59/EC <sup>(193)</sup>.

### Overweight people

The body mass index (BMI), also called 'Quetelet' index, is a measure of a person's weight relative to his/her height that correlates fairly well with body fat content in adults. It is an anthropometric measure calculated as the ratio between the weight measured in kilograms, and the square of the height measured in metres. The BMI can show if a person is overweight or underweight. A person with a BMI between 25 and 30 is considered to be overweight and a person with a BMI of 30 or more is considered as obese.

The data used here have been taken from national health interview surveys (HIS), replacing the former dataset collected through the European Community household panel. In future new sources will be used, in particular the survey modules of the European health interview survey (EHIS) planned to start in 2007-2008.

### Percentage of present smokers

The data are taken from national health interview surveys. In future the European health interview survey (EHIS) will also be used.

### Population 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 annual reporting under the first and the third daughter directives follows Commission Decision 2004/461/EC of 29 April 2004 laying down a questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council, replacing Council Decision 2001/839/EC of 8 November 2001.

The urban population exposure to air pollution by particulate matter is calculated as the population-weighted annual mean concentration of particulate matter [in mg/m<sup>3</sup>].

### Population 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 annual reporting under the first and the third daughter directives follows Commission Decision 2004/461/EC <sup>(194)</sup>, replacing Council Decision 2001/839/EC of 8 November 2001.

The urban population exposure to air pollution by ozone is calculated as the population-weighted yearly sum of maximum daily eight-hour mean ozone concentrations above a threshold of 70 micrograms ozone per m<sup>3</sup> [in (mg/m<sup>3</sup>)-day]

### 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), on the basis of a methodology developed from 1990. The data refer to accidents at work resulting in more than three days' absence from work (serious accidents) and fatal accidents. A fatal accident is defined as an accident which leads to the death of a victim within one year of the accident. In order to avoid problems of comparability between countries with different reporting systems the data are given as an annual index (with base year 1998 = 100) of the incidence rate. The incidence rate of serious accidents at work is the number of accidents at work resulting in more than three days' absence per 100 000 persons in employment.

The national ESAW sources are the declarations of accidents at work, either to the public (social security) or private specific insurance for accidents at work, or to other relevant national authority (labour inspection, etc.) for countries having a 'universal' social security system.

<sup>(193)</sup> Commission Directive 2001/59/EC adapting to technical progress for the 28th time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

<sup>(194)</sup> Commission Decision 2004/461/EC laying down a questionnaire to be used for annual reporting on ambient air quality assessment under Council Directives 96/62/EC and 1999/30/EC and under Directives 2000/69/EC and 2002/3/EC of the European Parliament and of the Council.



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# Social inclusion

# 7

## **Strategy 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'*



## Policy Background

'Social inclusion, demography and migration' is one of the seven key challenges identified in the renewed sustainable development strategy. The strategy 'places human beings at the centre of the European Union's policies, by promoting fundamental rights, by combating all forms of discrimination and contributing to the reduction of poverty and the elimination of social exclusion worldwide'. Its overall objective is 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.

Social inclusion has long been at the centre of European policies. Articles 136 and 137 of the Treaty establishing the European Union, resulting from the Amsterdam Treaty of 1997 and the Nice Treaty of 2001, provide that the fight against social exclusion should be one of the EU's social policy goals. The Lisbon Summit of 2000 agreed to make a clear impact with regard to the eradication of poverty by 2010. This commitment was further built upon with the European social agenda agreed in Nice in the same year. In 2001, the social dimension was confirmed as one of the three pillars of the sustainable development strategy at the Gothenburg Council, and a set of commonly agreed indicators as a means of comparing best practice and measuring progress was established in Laeken. The goal of social inclusion was further stressed at the Barcelona Council (March 2002), which called for the setting of targets for the significant reduction in the number of persons at risk of poverty and social exclusion by 2010.

In March 2006, the European Council adopted a new framework for the social protection and social inclusion process. There is a new set of common objectives: three overarching objectives and objectives for each of the three policy areas of social inclusion, pensions, and health and long-term care. Member States coordinate their policies for combating poverty and social exclusion on the basis of a process of policy exchanges and mutual learning known as the 'open method of coordination' (OMC).

The overarching objectives of the OMC for social protection and social inclusion are to promote:

- (a) social cohesion, equality between men and women, and equal opportunities for all through adequate, accessible, financially sustainable, adaptable and efficient social protection systems and social inclusion policies;
- (b) effective and mutual interaction between the Lisbon objectives of greater economic growth, more and better jobs and greater social cohesion, and with the EU's sustainable development strategy;
- (c) good governance, transparency and the involvement of stakeholders in the design, implementation and monitoring of policy.

Following the revision of the Lisbon strategy, the Social Protection Committee of the European Council adopted in June 2006 a set of indicators for the social protection and social inclusion process.

Defining and measuring poverty and social exclusion is a difficult task as these notions are closely related to the concepts of well-being and of standard of living, which are difficult issues to tackle. Although there is no single measure of poverty that is universally accepted, the one given by the EU Council of Ministers in 1984 is often used: are regarded as poor 'those persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong'. Monetary aspects of poverty are important as low income impairs access to a range of basic goods and services. However, poverty and social exclusion are multidimensional concepts, and other equally relevant aspects should be considered, such as access to employ-

ment, education, housing, health care, the degree of satisfaction of basic needs and the ability to participate fully in society.

## Main changes

**Table 7.1: Evaluation of changes in the social inclusion theme (from 2000) <sup>(195)</sup>**

	EU-27	EU-15
<b>Risk of poverty</b>	:	:
<b>Monetary poverty</b>		
Intensity of poverty risk	:	:
Income inequalities	:	:
<b>Access to labour market</b>		
Jobless households		
Children aged 0-17	*	
Adults aged 18-59	*	
Long-term unemployment		
Gender pay gap		
<b>Education</b>		
Early school-leavers		
Persons with low educational attainment		
Lifelong learning		



### LEGEND:

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available
- \* refers to EU-25

<sup>(195)</sup> The evaluation was based on years 2001-05 for EU-25 jobless households. There is no evaluation of trends on public expenditure on education, as it is considered as a contextual indicator, without any clear optimal level.

While the lack of trend data at EU level precludes on overall assessment of the progress of Member States towards the objective of making a clear impact of reducing the number of people at risk of poverty, newly available harmonised data show that 16 % of EU citizens were still at risk of poverty in 2005. There was no significant improvement in the number of people in jobless households. Positive signs include an improvement in long-term unemployment, in the gender pay gap, and in some education-related indicators.

In 2005, 16 % of EU-25 citizens lived under the poverty threshold defined as 60 % of their country's median income, a situation likely to hamper their capacity to fully participate in society. This rate ranged from 10 % or less in Sweden and the Czech Republic to 21 % in Lithuania and Poland. Children (aged 0-15) and young people (aged 16-24) are often at greater risk-of-poverty than the rest of the population. Women are also more at risk of entering poverty with a rate of 17 % in 2005 compared to 15 % for men.

Short-term exposure to poverty risk should not automatically be assumed to imply low living standards, but long-term dependence on low income is usually seen as a barrier to social inclusion, and is reflected in the persistent risk of poverty, which is not yet available with EU-SILC data.

The first harmonised data on the risk of poverty gap, which illustrates how poor are the poorest, indicate that the gap stood at 22 % in 2005 in both the EU-15 and the EU-25. Inequality

## The risk of poverty remains high in the EU-25 <sup>(196)</sup>

<sup>(196)</sup> Following a change in the main source of income data at EU level (from ECHP to EU-SILC), the monetary poverty data presented in this analysis cannot be analysed in trends yet. However, EU-SILC data are available for all EU-25 Member States from 2007 on (survey year 2005) and provide EU harmonised and comparable data on which to base a fair comparative assessment of poverty across the EU. See methodological notes.



of income distribution is also illustrated by the fact that the combined incomes of the 'richest' 20 % of the population were 4.9 times higher than those of the 'poorest' 20 % in the EU-25 in the same year.

**No major decrease in jobless households, but some recent progress in long-term unemployment**

From 1995 to 2000, the proportion of people living in jobless households decreased in the EU-15 both for children aged 0 to 17 years, and for people aged 18 to 59 years. In the following period, from 2000 to 2006, the proportion remained stable at 9.5 % in 2006 for children aged 0 to 17 years in the EU-25, and decreased only slightly for the other age group in the EU-27, and both age groups in the EU-15. Beyond the dependence on social benefits, living in a jobless household prolongs the lack of contact with the labour market, and for children it increases the risk of inter-generational transmission of poverty since no working adult is in a position to act as a role model.

Long-term unemployment decreased significantly from 5 to 3.4 % in the EU-15 from 1994 to 2000. This was followed by an increase up to 2004, but improvement in the most recent years resulted in an overall decrease to 3.1 % in 2006 in the EU-15 and a decrease from 4 to 3.6 % from 2000 to 2006 in the EU-27. Unemployment has strong impacts on society, both from an economic and from a social point of view. Among the most important, unemployment causes the deterioration of the wealth of experience obtained from education processes and from previous working experiences, the exit from the labour market, a persistent absence of income and a barrier to professional progression.

Gender pay gaps in the EU-27 decreased from 17 % to 16 % from 1994 to 2000, and again from 16 % to 15 % in the following period, from 2000 to 2005.

**Box 7.1: Objectives related to social inclusion, demography and migration in the renewed sustainable development strategy**

Overall objective: To create a socially inclusive society by taking into account solidarity between and within generations and to secure and increase the quality of life of citizens as a precondition for lasting individual well-being.

Operational objectives and targets

- Pursuing the EU objective that steps have to be taken to make a decisive impact on the reduction of the number of people at risk of poverty and social exclusion by 2010 with a special focus on the need to reduce child poverty.
- Ensuring a high level of social and territorial cohesion at EU level and in the Member States as well as respect for cultural diversity.
- Supporting the Member States in their efforts to modernise social protection in view of demographic changes.
- Significantly increasing the labour market participation of women and older workers according to set targets, as well

as increasing employment of migrants by 2010.

- Continuing developing an EU migration policy, accompanied by policies to strengthen the integration of migrants and their families, taking into account also the economic dimension of migration.
- Reducing the negative effects of globalisation on workers and their families.
- Promoting increased employment of young people. Intensifying efforts to reduce early school leaving to 10 % and to ensure that at least 85 % of 22-year olds should have completed upper secondary education. By the end of 2007 every young person who has left school and is unemployed should be offered a job, apprenticeship, additional training or other employability measure within six months, and within no more than four months by 2010.
- Increasing the labour market participation of disabled persons.

**The number of early school-leavers has decreased**

The percentage of early school leavers clearly decreased from 1996 to 2000 in the EU-15, by 2.1 percentage points. In the following period, from 2000 to 2006, it decreased at a similar pace in both the EU-27 and the EU-15, reaching respectively 15.3 % and 17 %. However the 2006 values are still well above the 2010 target of 10 %. The share of persons with low educational attainment clearly decreased in the EU-27 from 35.6 % to 30 % overall between 2000 and 2006. Almost a third of the population aged 25-64 was therefore still concerned by low educational achievement in 2006. Lifelong learning increased from 7.1 % in 2000 to 9.6 % in 2006 in the

EU-27, and from 8 % to 11.1 % in the EU-15, showing an encouraging trend in the light of the Barcelona target of reaching 12 % by 2010, although growth has levelled off in the latest years. The share of public expenditure on education in the EU-27 grew slightly from 5.0 % of GDP in 2001 to 5.2 % in 2003.

## Rationale for the selection of indicators

The indicators selected in this theme are related to the renewed sustainable development strategy key challenge 'social inclusion, demography and migration' (Box 7.1).

### Box 7.2: The open method of coordination indicators

The Laeken European Council, in December 2001, endorsed a first set of 18 common statistical indicators for social inclusion, which allow monitoring progress in a comparable way among Member States. In the context of the open method of coordination, the aim of the strategy is to make a decisive impact on the eradication of poverty and social exclusion by ensuring:

- access for all to the resources, rights and services needed for participation in society, preventing and addressing exclusion, and fighting all forms of discrimination leading to exclusion;
- the active social inclusion of all, both by promoting par-

ticipation in the labour market and by fighting poverty and exclusion;

- that all relevant bodies are mobilised.

In June 2006, the Social Protection Committee adopted a new set of indicators consisting of a portfolio of overarching indicators meant to reflect the newly adopted overarching objectives and of three strand portfolios for social inclusion, pensions, and health and long-term care. In this context a number of areas for development were identified, notably in the areas of social inclusion (child well-being, material deprivation, housing).

The whole set of indicators in this theme is closely linked to the list of social inclusion indicators, which was reviewed in 2006 in the context of the adoption of broader set of common indicators to monitor social protection and social inclusion policies (see Box 7.2). The central issue of 'social inclusion' is reflected in the headline indicator 'At-risk of poverty rate after social transfers' which measures income poverty with reference to the poverty line, an arbitrary threshold of 60 % of the national median equivalised annual income below which people are considered poor. The indicator does not measure poverty itself, but people having less than 60% of national median income can be considered as having a high risk of being poor. The other indicators focus on monetary poverty and the alternative dimensions of poverty and social exclusion, particularly the situation on the labour market and in education, as the risk of poverty is particularly high for the unemployed and the low-skilled. Indicators are split into three subthemes:

- **Monetary poverty and living conditions:** this subtheme currently mainly includes indicators related to monetary poverty - measured with reference to the poverty line - including further breakdowns of the 'at-risk-of-poverty rate', by gender and by age group, and the 'relative median at risk of poverty gap' focuses on the intensity of poverty. An indicator on 'inequality of income distribution' compares the incomes of the most and least well-off. In future, the aim is to also include indicators related to child well-being (looking at dimensions other than income poverty), material deprivation and adequacy of housing conditions, currently being developed by the EU Social Protection Committee. Although the 'persistent risk of poverty is directly relevant for sustainable development, the evaluation of trends since 2000 was not possible due to a change in the data source.
- **Access to labour market:** lack of access to the labour market is an issue that is both the target of labour market and social inclusion policies. Long-term unemployment is one of the main factors leading to poverty and social exclusion for adults and chil-



dren, and the number of people living in jobless households is a factor contributing to the persistence of poverty. Gender discrimination puts women in unfavourable positions in the labour market.

- **Education:** this subtheme looks at measures of investment in human capital through education and life-long learning, with the indicators 'early school-leavers' 'persons with low educational attainment' and 'lifelong learning'. 'public expenditure in education' provides background information on the level of investment in the education system. This subtheme should be completed in the future by two indicators on 'low reading literacy performance of pupils', and 'ICT skills'.

### Potential linkages

#### Linkages within social inclusion

There are strong inter-linkages between indicators within this theme. A clear example is that access to labour market is a key factor in social inclusion. Long-term unemployment increases the risk of social exclusion. This is especially of concern for children living in jobless households, as it may affect society's long-term health and the capacity of adapting to changes. An increase in the gender pay gap could increase the risk of poverty as single women are more exposed to poverty. Education and training on the other hand, are likely to increase employability, and reduce the risk of poverty.

#### Linkages with socioeconomic development

Poverty and social conditions have interactions first of all with the socioeconomic theme, since poverty and social conditions in all their aspects are expected to have a strong link with the state of the economy: a high level of poverty is a burden to national economies. Increases in long-term unemployment and in jobless households affect the economy negatively. Education is also a key factor as an investment in human capital. An increase in the number of people with a low level of education could reduce the economy's capacity to engage its human resources for the creation of economic welfare, and could negatively influence the growth of GDP, and long-term competitiveness. An increase in the gender pay gap is expected to have consequences on employment as it might reduce the attractiveness of work for women.

On the other hand, a stronger economy can free up resources to alleviate poverty. Weak economic growth could also have negative impacts on (long-term) unemployment and on the number of people belonging to jobless households, and on the level of poverty more generally since long-term unemployment can be a key factor in social exclusion.

#### Linkages with demographic changes

Social exclusion is also linked to demographic changes: on the one hand, the risk of poverty is higher for older people, and on the other hand an increase in public spending to reinforce social cohesion may have a negative impact on public finance sustainability.

#### Linkages with environment and health

Poverty has a link with sustainable consumption and production and with the environmental dimension in general: on the one hand, people from different income groups have different consumption patterns, with different environmental impacts, and on the other hand, it is believed that poorer people are often more affected by environmental degradation.

Poverty and in particular the persistent risk of poverty may have a negative impact on health issues. Education is also important to acquire knowledge about a healthy diet.

#### Linkages with climate change, energy, and transport

The level of poverty, and a change in the level and quality of education could also reduce society's capacity to adapt to new modes of consumption and production, having a wide-ranging effect on issues related to climate change and energy, and on transport. The number of jobless households, through its impact on children, may also affect society's ability to adapt to changes.



Globalisation has potential impacts on unemployment through delocalisation. There is also a strong social dimension in global partnership issues, which have a direct parallel with issues addressed in this theme.

Linkages with  
global partnership

#### Further reading on social inclusion in Europe

*Statistics in focus*: Income poverty and social exclusion in the EU-25, No 13/2005, Eurostat

Report on social inclusion in the 10 new Member States, 2005. European Commission, Directorate-General for Employment and Social Affairs

Working together, working better: A new framework for the open coordination of social protection and inclusion policies in the European Union, COM(2005) 706.

Implementation and update reports on 2003-2005 NAPs/inclusion and update reports on 2004-2006 NAPs/inclusion, SEC(2006) 410

Joint report on social protection and social inclusion 2007, COM(2007)13

A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training, COM(2007) 61



## Headline indicator



## Risk of poverty

**Definition:** The ‘at-risk-of-poverty rate after social transfers’ indicator is defined as the share of persons with an equivalised disposable income after social transfers (total income) below the 60 % national median income. The median is the value which splits the distribution of income into two parts of equal size; exactly 50 % of people fall below that value and 50 % are above it. Household income is ‘equivalised’ using a methodology established by the OECD, which takes into account differences in household size and composition, making comparisons more realistic (see ‘methodological notes’). The EU aggregate is a population-weighted average of individual national figures.



## Indicator relevance

The renewed sustainable development strategy includes ‘the EU objective that steps have to be taken to make a decisive impact on the reduction of the number of people at risk of poverty and social exclusion by 2010 with a special focus on the need to reduce child poverty.’

The Lisbon European Council of March 2000 also required Member States and the European Commission to make a decisive impact on the eradication of poverty by 2010. This indicator is one of the overarching indicators defined under the open method of coordination <sup>(197)</sup>, which aim at measuring progress in the fight against poverty and social exclusion.

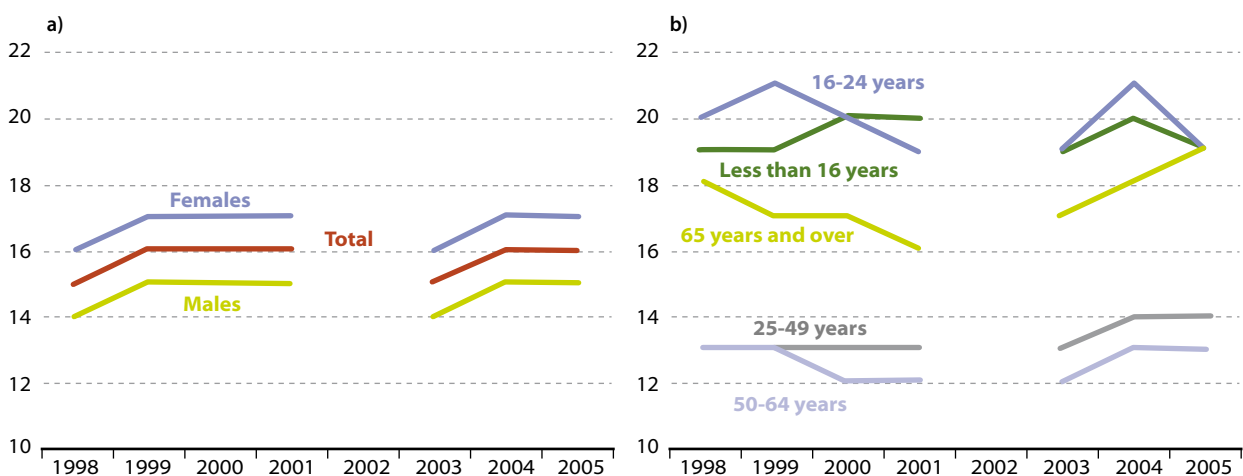
It gives a picture of the situation regarding deprivation, poverty and social inclusion. The income level is usually considered as one of the main factors in determining an individual standard of living. More income enhances consumption by offering ‘more choices and access to goods and services’ <sup>(198)</sup> within society and hence also gives rise to a higher quality of life. Social transfers have an important redistributive effect that helps to reduce the number of people who are at risk of poverty. Its impact is more marked in the case of older people.

To identify which categories are the most vulnerable, this income poverty indicator has been broken down by gender and by age group. Various factors contribute to determining the range of poverty risk, for example age, gender, family status (single or living in larger households, with or without dependent children), and activity status.

<sup>(197)</sup> See theme overview.

<sup>(198)</sup> Income on the move, Employment, Social Affairs and Equal Opportunities DG, July 2002.

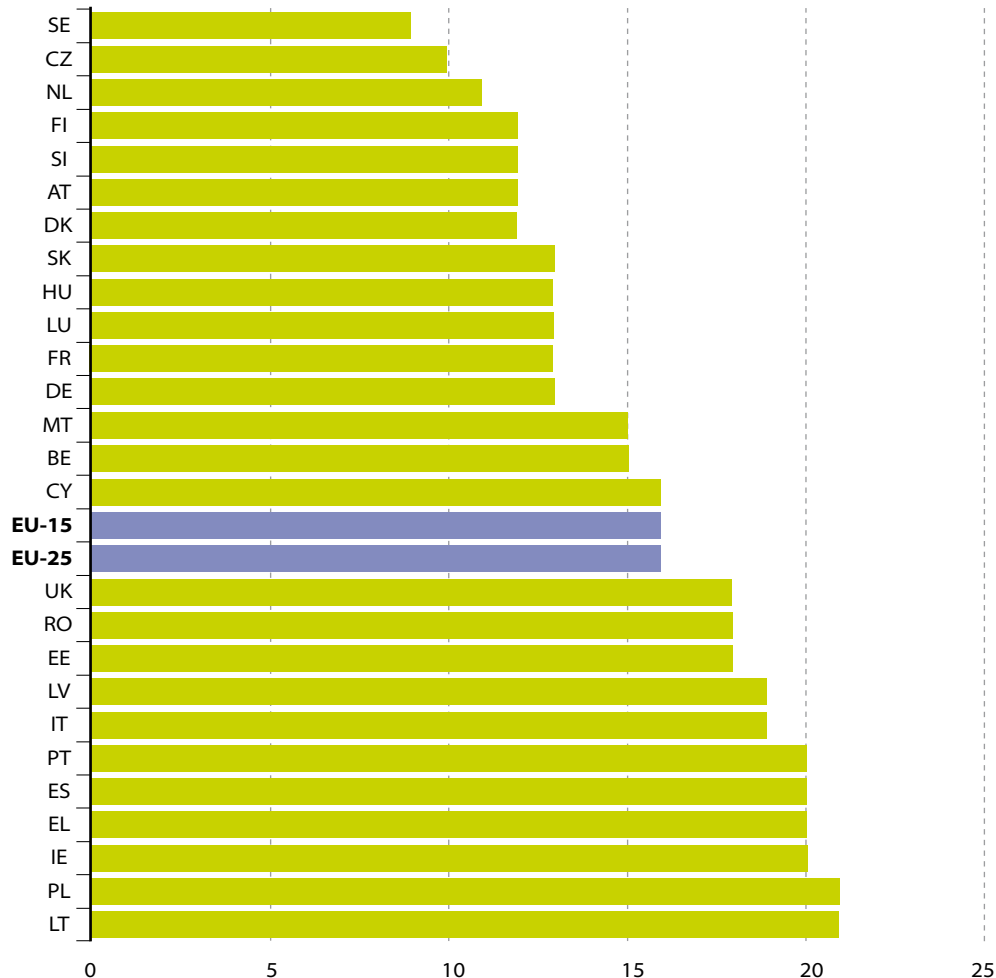
Figure 7.1: EU-25 at-risk-of-poverty rate (a) by gender and (b) by age group (%)



NB: Due to a change of data source, there is a disruption in the time series availability of this indicator. 2005 is the first year where EU-SILC data are available for the EU-25. Data for the age group 0-18, which were retained by the Social Protection Committee, are only available under EU-SILC.

Source: Eurostat.

The at-risk-of-poverty rate in the EU-25 did not change significantly between 1998 and 2001. Following a change in data source after 2001, it stood at 16 % in 2005 (the first year with fully harmonised data for all EU Member States).



**Figure 7.2:**  
At-risk-of-poverty  
rate after social  
transfers in 2005  
(%)

*NB:* The figures for Romania and Bulgaria are based on national sources and are not fully comparable.

Source: Eurostat.

The EU aggregated value reflects different situations inside the EU-25. The share of population at risk of poverty varies from 9 % in Sweden and 10 % in the Czech Republic, to 21 % in Poland and Lithuania. In general, southern countries (Italy, Portugal, Spain and Greece), the United Kingdom and Ireland, and several of the countries of the 2004 enlargement (Estonia, Latvia, Lithuania, and Poland) are above the EU-25 average with rates varying from 18 to 21 %.

From a gender perspective, except two countries where the rate is higher for men (Hungary and Poland) and five countries where there is no gender difference (Denmark, Luxembourg, Netherlands, Romania and Slovakia), the rate is generally higher among women than among men. In 2005, the difference between genders was highest in Italy (4 percentage points), Bulgaria (4 percentage points in 2004), followed by Greece, Cyprus and Slovenia (3 percentage points) <sup>(199)</sup>.

Children of less than 16 years and people between 16 and 24 years are often at greater risk of poverty than the rest of the population (19% for both groups in the EU-25 in 2005). Nordic

<sup>(199)</sup> See Eurostat website on sustainable development for country breakdown.



States have relatively low rates for children of less than 16 years, but the level in the 16-24 group is relatively high.

The rate in the age group of 65 and over – 19 % in 2005 - is also higher than the rest of the population. Disparities among Member States are extremely high between countries such as the Czech Republic, the Netherlands (both 5 %), or Hungary (6 %) where the rate is below the national average and countries such as Cyprus (51 %), Ireland (33 %), or Spain (29 %) where the risk of poverty is quite high in the elderly population.

It should be borne in mind when interpreting this indicator that it is based on a relative (as opposed to absolute) concept of poverty. A change in the indicator reflects a change in the number of people with an income below a poverty threshold, which varies in relation to the prevailing socioeconomic situation.

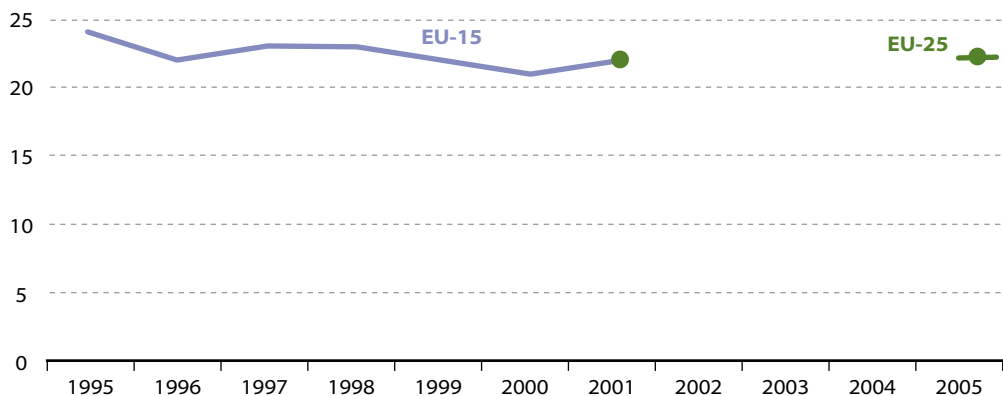
## Intensity of poverty risk



**Definition:** The 'relative median at-risk-of-poverty gap' is calculated as **the at-risk-of-poverty threshold minus the at-risk-of-poverty threshold median equivalised disposable income of persons below the at-risk-of-poverty threshold** (see the at-risk-of-poverty rate indicator). It is expressed as a percentage of the at-risk-of-poverty threshold (cut-off point: 60 % of median equivalised income). The EU aggregate is a population-weighted average of individual national figures.

The relative median at-risk-of-poverty gap concentrates on the bottom part of the income distribution. It describes how far below the poverty threshold the poorest people stand by comparing the median income of the poor to the poverty threshold, i.e. it is a measure of the intensity of poverty. From a sustainable development point of view, the smaller the gap, the better.

### Indicator relevance



**Figure 7.3: Relative at-risk-of-poverty gap (%)**

*NB:* Due to a change of data source, there is a disruption in the time series availability of this indicator. 2005 is the first year where EU-SILC data are available for the EU-25.

Source: Eurostat.

Following a decrease in the relative median at-risk-of-poverty gap from 24 % in 1996 to 21 % in 2000 in the EU-15, the gap stood at 22 % in 2005 in both the EU-25 and the EU-15.

### Analysis

A geographical breakdown (see additional data on the SDI website) reveals significant differences amongst EU-25 countries, with smaller risk of poverty gap in Finland (14 %), Austria (15 %) and Denmark (16 %), and higher rates found in Poland (30 %), Lithuania (28 %), Latvia and Portugal (27 %).



### Monetary poverty and living conditions



## Income inequalities

**Definition:** The indicator is defined as the **S80/S20 income quintile share ratio**, which is the ratio of equivalised total disposable income received by the 20 % of the country's population with the highest income (top quintile) to that received by the 20 % of the country's population with the lowest income (lowest quintile). The higher the ratio, the wider is the gap between the most (top 20 % quintile) and least well-off (bottom 20 % quintile).



### Indicator relevance

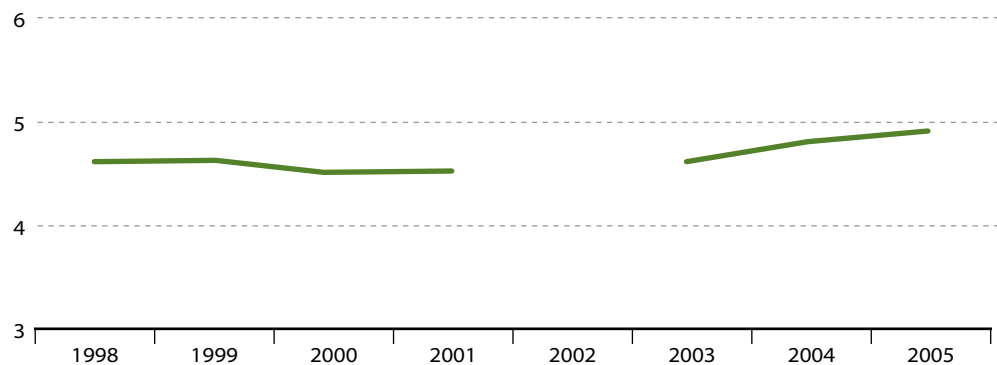
<sup>(200)</sup> The Gini index measures inequality in terms of individual (per capita), net-monetary income distribution (after taxes and social security transfers). It varies from 0 (no inequality) to 1 (total inequality, which would mean that only one person has all income). Both the S80/S20-ratio and the Gini index are Laeken indicators.

The renewed sustainable development strategy aims for a high level of social cohesion at EU level and in the Member States, and reducing inequalities contributes to this objective. Income distribution is closely related to the social model applied by countries, and contributes to measuring inequalities related to income. The focus of the poverty risk measure is on the bottom part of the income distribution. It is also interesting to look at the overall income distribution. The S80/S20-ratio is a summary measure of inequality in terms of equivalised disposable income available which is easier to grasp than the Gini coefficient <sup>(200)</sup> as it shows the gap between the richest 20 % of the population and the poorest 20 %.

**Figure 7.4:**  
EU-25 inequality of income distribution, S80/S20 income quintile share ratio

**NB:** Due to a change of data source, there is a disruption in the time series availability of this indicator. 2005 is the first year where EU-SILC data are available for the EU-25.

Source: Eurostat.



### Analysis

In the EU-25, the ratio between the top and the bottom of the income distribution remained almost constant from 4.6 in 1998 to 4.5 in 2000. Since 2003, if the ratio has shown some increase up to 4.9 in 2005, it should be remembered that due to the change in data source there was a break in series and data are not fully comparable between years.

There are large disparities between countries, with ratios varying from less than 4 in the Czech Republic, Denmark, Luxembourg, Austria, Slovenia, Slovakia, Finland and Sweden, to more than 6 in Latvia, Lithuania, Poland and Portugal.

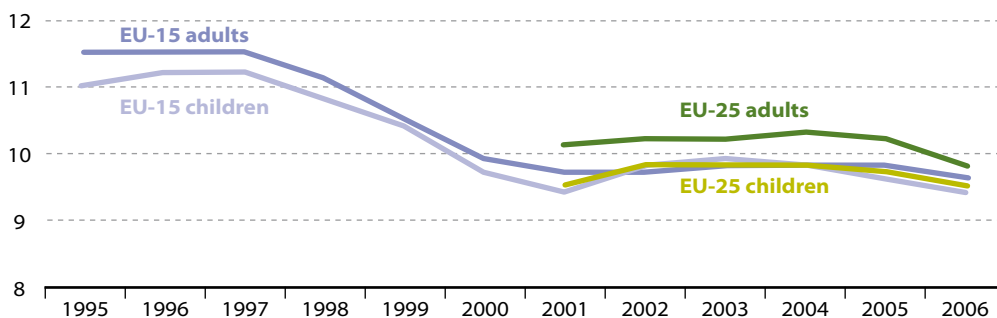
## Jobless households



**Definition:** The indicator ‘persons living in jobless households’ is defined as the number of children aged 0-17 years and the number of persons aged 18-59 years who are living in eligible households where none of the members are working, expressed as a percentage of the total population aged 0-17, respectively aged 18-59, who are living in eligible households. Households composed solely of students are excluded.

It is important to consider the structure of those households affected by joblessness, as it is the well-being of the whole household that is put at risk by the fact that no-one in the household is working. Beyond the dependency on social benefits, living in a jobless household extends the lack of contact to the labour market, and for children, it increases the risk of intergenerational transmission of poverty since no working adult is in a position to act as a role model. In addition, access to basic services in the fields of health, housing, education, justice and to other private services such as culture, sport and leisure might be seriously hampered.

Following the Nice Council (December 2000), some objectives have been set up within the framework of the European employment strategy which ask Member States to facilitate ‘access to resources, rights, goods and services for all’, thus exceeding the more traditional objective of access to employment.



**Figure 7.5: People living in jobless households by age group (%)**

Source: Eurostat.

The risk for people, whether children or adults, to live in jobless households declined overall from 1995 to 2001 (1.6 percentage point for children and 1.8 for adults) in the EU-15, but has stabilised since then. The EU-25 has also seen a stabilisation since 2001.

The share of working age adults living in jobless households in the EU-25 declined from 10.1 to 9.8 % between 2001 and 2006. The share for children remained constant at 9.5 % despite a slight increase in the intermediate years (from 2002 to 2005).

Remarkable differences are observed among EU countries (see country breakdown on the SDI website), where in 2006, children living in jobless households represented between 2.7 % of the total population (provisional data) in Luxembourg and 16.2 % in the United Kingdom, and adults represented between 4.9 % of the total population in Cyprus and 14.3 % in Belgium. It should also be noted that there is no straightforward relationship between the level of employment or unemployment and the share of people living in jobless households in a particular

## Analysis



country. Some countries such as Spain or Portugal observe unemployment rates higher than the EU average, but quite low levels for the present indicator with respectively 6.3 and 5.8 %. On the contrary, some countries such as the United Kingdom, despite a quite low level of unemployment, have quite a high value for this indicator.



## Long-term unemployment



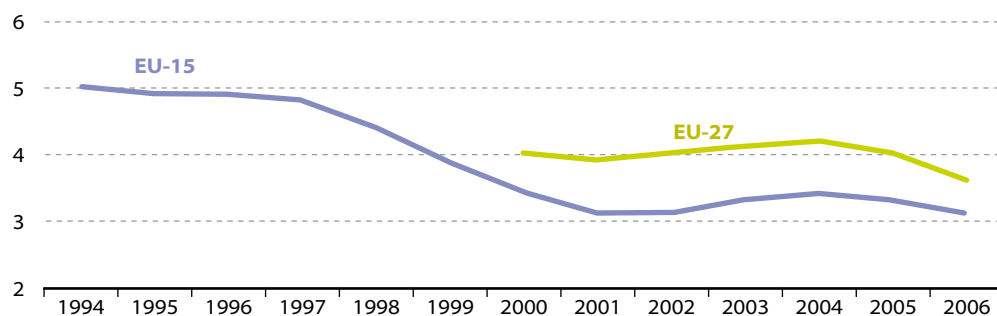
**Definition:** The ‘**long-term unemployment rate**’ is the share of unemployed persons for 12 months or more in the total number of active persons in the labour market. Active persons are those who are either employed or unemployed.

Unemployed persons are all persons 15 to 74 years of age who were not employed during the reference week, had actively sought work during the past four weeks and were ready to begin working immediately or within two weeks.

The duration of unemployment is defined as the duration of a search for a job or as the length of the period since the last job was held (if this period is shorter than the duration of search for a job).

It is important to monitor the trends in long-term unemployment for sustainable development, as it leads to high risks of poverty and especially of social exclusion (precariousness, marginalisation). Employment policy is also a key area for the Lisbon strategy. The 1997 European employment strategy (EES, also known as the ‘Luxembourg process’) aims to fight against unemployment as a whole. The EES has been revised since the refocusing of the Lisbon strategy in 2005.

### Indicator relevance



**Figure 7.6:**  
Total long-term unemployment rate (%)

Source: Eurostat.

Following the same pattern as the unemployment rate (see chapter on socioeconomic development), long-term unemployment in the EU-15 decreased strongly from 5 % to 3.4 % in 2000, and then further to 3.1 % in 2002. Following a further increase up to 2004, there has been some progress since, with a decrease to 3.1 % in 2006, which resulted in an overall decrease over the period 2000 to 2006. Progress was similar in the EU-27, with an overall decrease from 4 % in 2000 to 3.6 % in 2006. In 2006, some countries such as Slovakia (10.2 %), Poland (7.8 %) and Bulgaria (5 %) had values well above the EU average (see additional data on the Eurostat website).

### Analysis



## Access to labour market



## Gender pay gap

**Definition:** The 'gender pay gap in unadjusted form' is the difference between average gross hourly earnings of male paid employees and those of female paid employees as a percentage of average gross hourly earnings of male paid employees. The population consists of all paid employees aged 16-64 that are 'at work 15+ hours per week', covering all sectors and firm sizes of the economy.

Gross earnings cover remuneration in cash paid by the employer during the reference year, before tax deductions and social security contributions payable by wage-earners and retained by the employer.



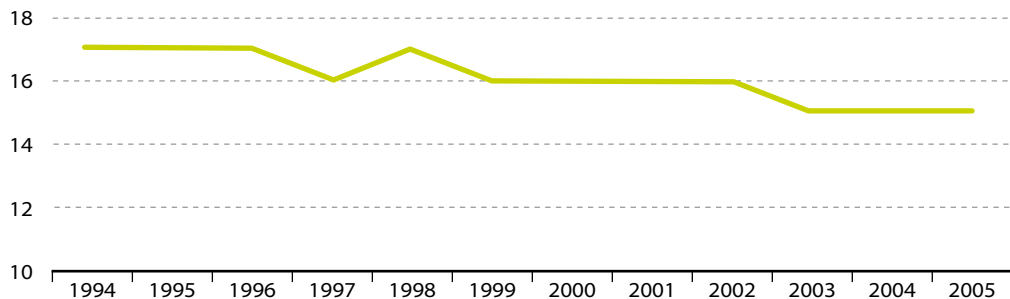
## Indicator relevance

One of the actions included in the renewed sustainable development strategy is that Member States and the EU should 'implement the European pact for gender equality agreed at the European Council in March 2006'.

The gender pay gap indicator presents one aspect of gender inequality, through the analysis of wage discrepancies on the labour market. It is believed that gender inequality in pay increases the poverty risk for households, in particular with dependent children. Low-paid women become more vulnerable by relying mainly on male earnings, especially in the case of divorce or death of their spouse. Eliminating inequalities and promoting equality between women and men has been set as an EU goal since the (1957) Treaty and renewed in the Nice Treaty, which states that the promotion of equality between men and women is one of the tasks of the Community, and which stipulates that the principle of equal pay for male and female workers for equal work or work of equal value be applied.

**Figure 7.7: EU-27 gender pay gap in unadjusted form (%)**

Source: Eurostat.



## Analysis

The gender pay gap in EU-27 decreased by 1 percentage point, from 17 % to 16 % between 1995 and 2000 and again from 16 % to 15 % in between 2000 and 2005. These data hide very different situations within EU countries (see country breakdown on the SDI website). In 2005, the highest gap was found in Cyprus and Estonia (25 %), and Slovakia (24 %); at the lower end were Malta (4 %), Belgium (7 %), and Slovenia (8 %). A number of countries which joined the EU in 2004 saw a particularly significant decrease in the gender pay gap between 2000 and 2005, with for example a decrease of 10 points in Hungary from 21 % to 11 %.

A number of factors may contribute to a change in the gender pay gap: differences in male and female labour market participation and career structures, differences in male and female wage structures and gender effects of pay and promotion policies, and the concentration of women in low-paying sectors and occupations.

## Public expenditure on education

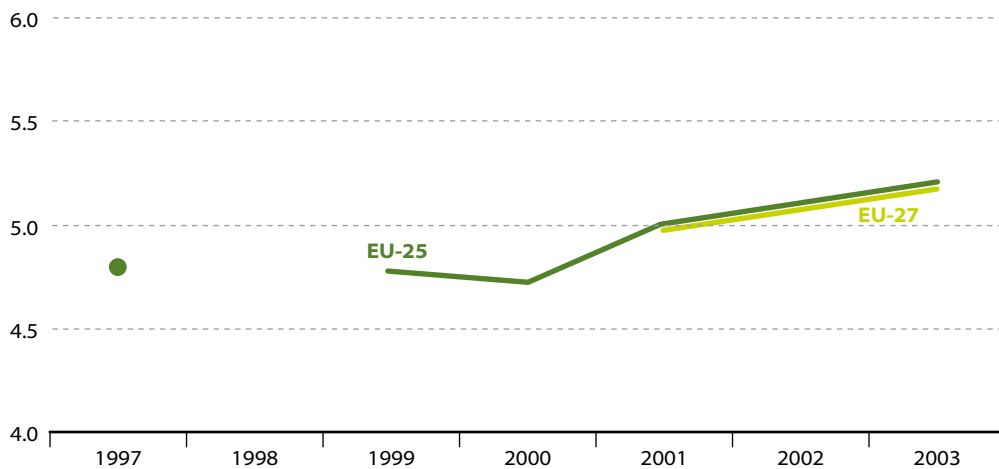


**Definition:** The indicator is defined as ‘total public expenditure on education’, expressed as a percentage of GDP.

Generally, the public sector funds education either by bearing directly the current and capital expenses of educational institutions (direct expenditure for educational institutions) or by supporting students and their families with scholarships and public loans as well as by transferring public subsidies for educational activities to private firms or non-profit organisations (transfers to private households and firms). Both types of transactions together are reported as total public expenditure on education.

The 2006 sustainable development strategy defines education and knowledge as ‘cross-cutting policies contributing to the knowledge society’. It recognises that ‘education is a prerequisite for promoting the behavioural changes and providing all citizens, with the key competences needed to achieve sustainable development’, and that it ‘can contribute to greater social cohesion and well-being’. Expenditure on education can be considered as investment in social capital. However, it is difficult to establish a direct parallel between public expenditure in education and the quality of education in any particular country.

### Indicator relevance



**Figure 7.8: Public expenditure on education (% of GDP)**

Source: Eurostat.

In the EU-25, following a slight decrease in the later part of the 1990s, public expenditure on education grew from 4.7 % of GDP in 2000 to 5.2 % in 2003. A similar increase was observed in the EU-27, with an increase of 0.2 percentage points, from 5.0 % in 2001 to 5.2 % in 2003.

### Analysis

Although comparisons between countries should be made with extreme care due to large differences in the coverage of the indicator and in the structure of education systems, there are big discrepancies in the level of public expenditure for education between, on the one hand, a cluster of countries made of Denmark (8.3 %), Sweden (7.5 %) and Cyprus (7.4 %), and on the other hand, countries such as Romania (3.4 %), Greece (3.9 %) and Luxembourg (4.1 %) which are at significantly lower levels (see country breakdown on the SDI website). To illustrate the difficulty to compare this indicator between countries, it should be noted for instance that expenditures related to students at tertiary level studying abroad are not included in Luxembourg (although very frequent) but are in Cyprus.



## Education



## Early school-leavers

**Definition:** The indicator is defined as the **percentage of the population aged 18-24 with at most lower secondary education and not in further education or training**. Early school-leavers refer to persons aged 18 to 24 in the following two conditions: the highest level of education or training attained is ISCED 0, 1 or 2 (pre-primary, primary and lower secondary education) and 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'.



## Indicator relevance

An operational objective of the renewed sustainable development strategy is 'intensifying efforts to reduce early school leaving to 10 % and to ensure that at least 85 % of 22 year olds should have completed upper secondary education'. More generally for sustainable development, it is essential that all people have a set of basic knowledge and skills in order to fully participate in society. This is crucial in social and political life but also for smoothly entering the labour market, and will enable young people to understand and adapt to our quick-evolving societies, especially in the context of globalisation.

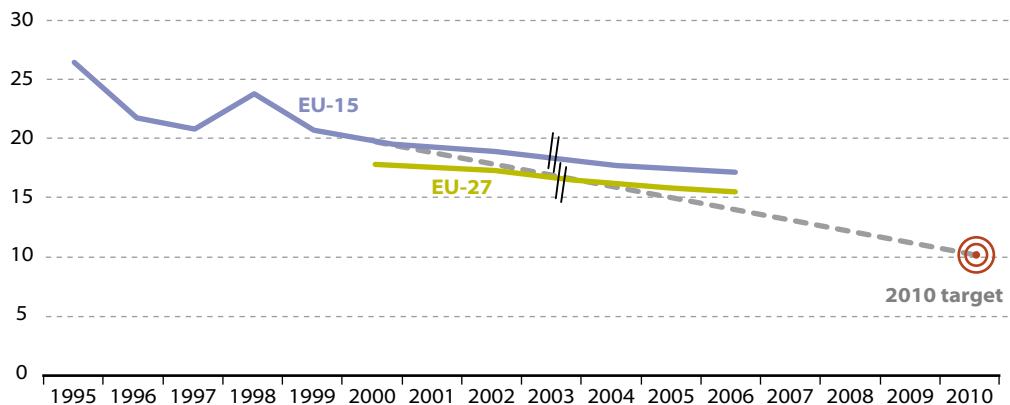
This indicator is also one of the five used for monitoring progress towards Lisbon objectives in the field of education and training <sup>(201)</sup>. Reducing the number of early school-leavers is crucial in a European Union which has set itself the ambition of becoming 'the most competitive and dynamic knowledge-based economy in the world'.

<sup>(201)</sup> COM(2007) 61.

**Figure 7.9: Early school-leavers (%)**

NB: Break in series in 2003.

Source: Eurostat.



## Analysis

The rate of the young people aged 18 to 24 who leave the education system with only lower secondary education at best and who have not attended education or training in the four weeks preceding the survey, decreased in the EU-27 countries from 17.6 % in 2000 to 15.3 % in 2006, representing a decrease of 0.4 percentage points per year. In the EU-15, while early school leavers had decreased by 1.3 percentage points per year from 1995 to 2000, this decrease slowed down to 0.4 percentage points per year from 2000 to 2006. The average rate of decrease after 2000, both for the EU-15 and EU-27 seems too slow to reach the 2010 target of 10 %. In 2006, six countries had reached the 2010 target of maximum 10 % (see country breakdown on SDI website), four of which are from the 2004 enlargement: Slovenia (5.2 %), the Czech Republic (5.5 %), Poland (5.6 %) and Slovakia (6.4 %).

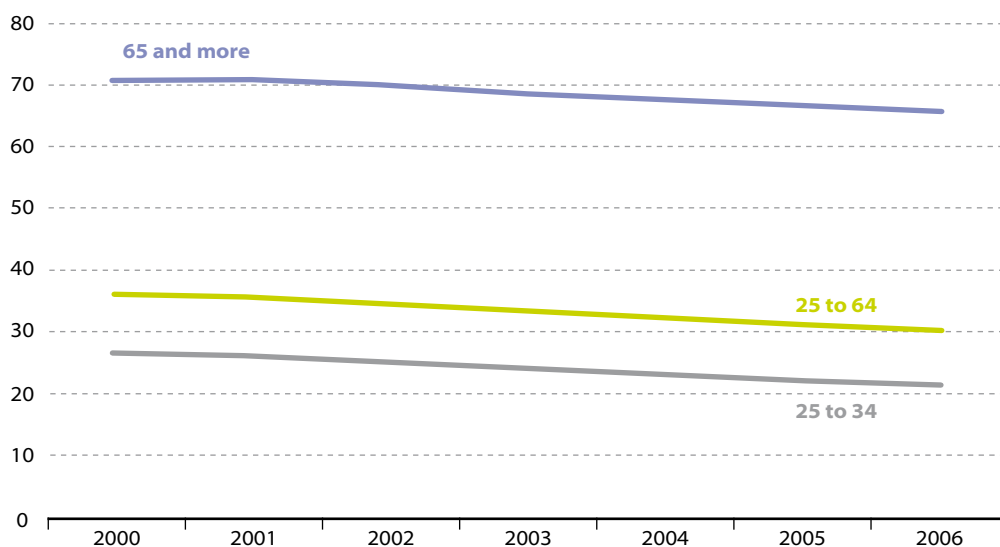
## Persons with low educational attainment



**Definition:** The ‘persons with low educational attainment’ indicator is defined as the **percentage of the population aged 25-64 years who have achieved ISCED level 2 or less** (pre-primary, primary and lower secondary).

In the renewed sustainable development strategy, education and training are among the ‘cross cutting policies contributing to the knowledge society’. Low educational attainment is regarded as a barrier to both personal and professional development and is also a drawback for society’s ambition of reducing the disparities and inequities between individuals or groups. The low-qualified are less likely to be engaged in well paid and stable employment, which will result in inadequate pension once retired. They are also less capable of assuring themselves and their children adequate life standards e.g. in the field of health.

### Indicator relevance



**Figure 7.10:** EU-27 persons with low educational attainment by age group (%)

Source: Eurostat.

The share of persons with low educational attainment decreased in the EU-27 countries by 5.6 percentage points overall between 2000 and 2006. Trends over time can also be observed by looking at different age groups: in the EU-27 as a whole, in 2006, as many as 65.0 % of the elderly (aged 65 years and over) had attained less than upper education, as opposed to 21.3 % of all 25-34 year olds.

### Analysis

If low educational attainment has declined over time, it still concerns 30 % of the total population aged from 25 to 64 years. This not only has negative effects on the capacity of these people to enter the working force and to develop their real career opportunities, but also to have satisfactory pension schemes in future.



## Education



## Lifelong learning

**Definition:** The indicator is defined as the **percentage of the adult population aged 25 to 64 participating in education and training**. Lifelong learning is computed on the basis of the variable 'participation in education and training in the last four weeks' from the EU labour force survey. From 2004, this variable is derived from two variables 'participation in regular education' and 'participation in other taught activities'. Self-learning activities are no longer covered.



## Indicator relevance

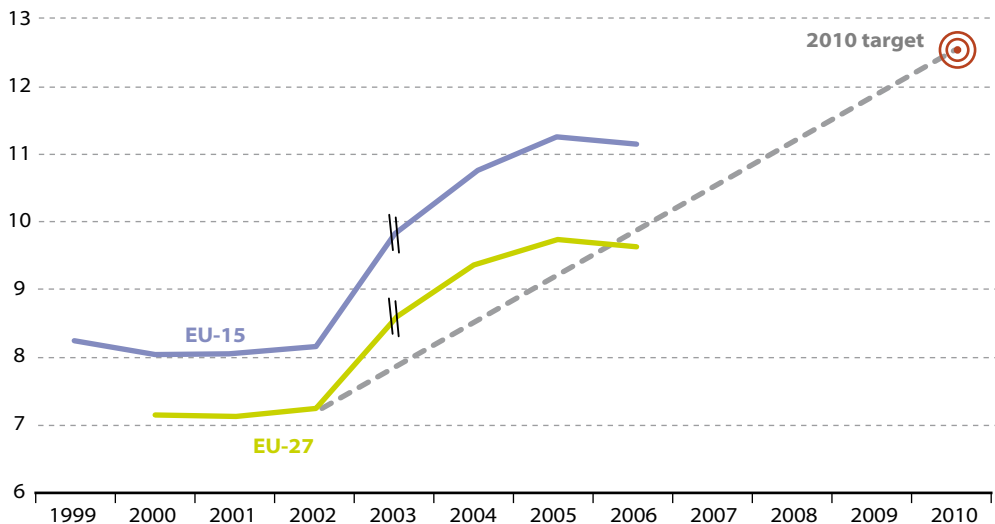
Lifelong learning is essential to sustainable development. As society shifts towards sustainable production and consumption patterns, workers and citizens will be needed who are willing to develop and adopt new technologies and organisational techniques as workers, as well as new attitudes and behaviour as citizens and consumers. Lifelong learning will help individuals to update and complement their knowledge, competencies and skills, thus contributing positively to reinforce their position in the labour market.

In 2002, the Barcelona Council stated that by 2010 Europe should be the world leader in terms of the quality of its education and training systems, a goal that was, inter alia, accompanied by the objective that by 2010 the average level of participation in lifelong learning should be at least 12.5 % of the adult working age population (25-64 age group). The renewed sustainable development strategy called for the adoption of a lifelong learning programme, which came into force in December 2006. The aim of the new programme is to contribute through lifelong learning to the development of the Community as an advanced knowledge society, with sustainable economic development, more and better jobs and greater social cohesion. It aims to foster interaction, cooperation and mobility between education and training systems within the Community, so that they become a world quality reference.

**Figure 7.11:**  
Lifelong learning  
(%)

NB: Break in series in 2003.

Source: Eurostat.



## Analysis

From 7.1 % in 2000, the rate of adult participation in education and training reached 9.6 % in the EU-27 in 2006, an encouraging trend in the light of the Barcelona target, although growth

has levelled off in the latest years. Rates of participation were higher in the EU-15, growing from an average of 8 % in 2000 to 11.1 % in 2006.

Even if more limited, the same upward trend could be observed in almost all new member states (see country breakdown on the SDI website). Large discrepancies are however observed amongst the EU Member States, with on the one hand a group of countries such as Sweden (32.1 % in 2005), Denmark (29.2 %), the United Kingdom (provisionally 26.6 %) and Finland (23.1 %) which were already well above the 2010 target in 2006, and other countries such as Bulgaria and Romania (both 1.3 %), Greece (1.9 %), Hungary and Portugal (both 3.8 %) which are still a long distance from it.



## Methodological notes

### Indicators based on the at-risk-of-poverty rate

The data are derived from the European Community household panel (ECHP) and the Community statistics on income and living conditions (EU-SILC) (see Box 7.3). The population consists of all persons living in private households. The term 'person' therefore includes all members

of the households, whether adults or children. Persons living in collective households, homeless persons or other difficult to reach groups are not covered. The EU aggregate is a population-weighted average of individual national figures. In line with the European Council decision, the risk-of-poverty rate is measured relative to the situation in each country rather than applying a common threshold to all countries.

### Box 7.3: The transition from the European Community household panel (ECHP) to the Community statistics on income and living conditions (EU-SILC)

The ECHP, which expired in 2001, was a panel survey based on a standardised questionnaire that involved annual interviewing of a representative panel of households and individuals, covering a wide range of topics: income, health, education, housing, demographics and employment characteristics. The sample of people selected for the first year of the survey was followed-up throughout the subsequent eight years of the survey, wherever they may have moved. Children born to sample women were included as sample persons and followed up. The ECHP was considered to be the sole common source of comparable data available for EU-15 Member States. The ECHP was replaced by the Community statistics on income and living conditions (EU-SILC), which has become the reference source of data on poverty and social exclusion in the EU. The EU-SILC is based on European Parliament and Council Regulation (EC) No 1177/2003 of 16 June 2003.

For the first time in 2007, EU-SILC data are available for all EU-25 members and for income year 2004, (survey year 2005). SILC provides EU harmonised and comparable data on which to base a fair comparative assessment of poverty across EU.

The EU-SILC project was launched in 2003 on the basis of a 'gentleman's agreement' in six Member States (Belgium, Den-

mark, Greece, Ireland, Luxembourg, and Austria) as well as in Norway. The starting date for the EU-SILC instrument under the abovementioned framework regulation was 2004 for the EU-15 (with the exception of Germany, Netherlands and the UK who had derogations until 2005) as well as for Estonia, Norway and Iceland. The new Member States with the exception of Estonia started in 2005. The instrument has also been implemented in Bulgaria, Romania, Turkey and in Switzerland and data will be available as from 2006-2007 (reference year). Implementation in Croatia is being discussed.

During the transition to EU-SILC for former EU-15 countries, and in all cases for new Member States, comparable indicators were compiled from national sources. Whilst every effort was made to assure maximum consistency, these indicators cannot be considered to be comparable with one another due to the differences of underlying data sources. Therefore, to isolate trends for countries enduring such a transition should be avoided.

An examination of the transition between ECHP and EU-SILC and its impact can be found in the Eurostat working paper 'The continuity of indicators during the transition between ECHP and EU-SILC', 2005.

'Equivalent income' involves adjusting household income to take into account economies of scale within a household. It is calculated by adding together the income received by all the members of the household, divided by the equivalent household size, where members of a household are weighted differently according to age. The modified OECD equivalence scale which is used assigns a weight of 1 to the first adult in a household, 0.5 to other household members over 14 and 0.3 to children under 14.

- For the EU-15 data are presented from the common ECHP data source until 2001 (in certain cases, until 2000), except Denmark and Sweden,
- for 2003, data for Belgium, Denmark, Greece, Ireland, Luxembourg, Austria and Norway are available from the updated 2003 version of EU-SILC,
- for 2004, the EU-15 data, except United Kingdom, the Netherlands and Germany plus Norway, Iceland and Estonia, are available from the updated 2004 version of EU-SILC,
- for 2005, all EU-25 data plus Norway and Iceland are available from the 2005 version of EU-SILC.

- for the remaining countries and years, data are obtained from national sources and harmonised *ex post* with EU-SILC methodology to produce this indicator.

### Inequality of income distribution

The data stem from the ECHP and the EU-SILC (see Box 7.3). The 80/20 income quintile share ratio is a measure of income distribution based on 'quintiles' of income distribution, ranking individual income into 5 'income groups' of equal size, each containing 20 % of the total population living in one country. Firstly, individuals are sorted according to their 'equivalised disposable income' (sorting order: lowest to highest value). The individuals at the lower end of the distribution that represent 20 % of persons are defined as 'poorest' (first quintile); those at the upper end of the distribution that represent 20 % of persons are defined as 'richest' (fifth quintile). The population consists of all persons living in private households of a country. To make income levels comparable, the concept of 'equivalised' disposable income is used (see glossary).



The EU aggregate is a population-weighted average of individual national figures.

#### Jobless households and long-term unemployment

The data are derived from the quarterly EU labour force survey (LFS) which is the main source of internationally comparable EU labour market statistics (see Box 1.4 for the population covered and the definition of unemployment). It is governed principally by 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 indicator 'jobless households' is based on spring results. The EU aggregate is derived from total populations obtained at national level.

For 'jobless households', EU aggregates are provided: up to 2000, on the basis of the available country data; from 2001, using the closest available year result in case of missing country data (excluding Sweden).

#### Gender pay gap

The indicator is based on several data sources, including the ECHP, the EU survey on income and living conditions (EU-SILC) (see Box 7.3), and national sources.

Administrative data are used for Luxembourg and the labour force survey is used for France (up to 2002) and Malta.

All other sources are national surveys except as follows:

2005: statistics on income and living conditions (EU-SILC): EU-25.

2004: statistics on income and living conditions (EU-SILC): BE, EL, ES, IE, IT, AT, PT and UK. The results for the first years of this new EU survey are provisional and subject to further quality assessment. They should therefore be interpreted with caution.

2003: statistics on income and living conditions (EU-SILC): EL, IE and AT.

2002: European Community household panel (ECHP): EL.

2001 and before: European Community household panel (ECHP): BE, DE, IT, DK, IE, UK, EL, ES, PT, AT and FI.

EU-27 and EU-15 estimates are population-weighted averages of the latest available national data, adjusted, where possible, to take into account a change in the data source. Countries without any previous gender pay gap data for a specific year are excluded from the EU-27 and EU-15 estimates. Where data have been provided by the national statistical offices based on national sources, the indicators for these countries cannot be considered to be fully comparable.

#### Public expenditure on education

The main source of data is the joint UIS (Unesco Institute of Statistics)/OECD/Eurostat (UOE) questionnaires on education statistics, which constitute the core database on education.

The statistics refer to education in the ordinary school and university system, as defined in the international standard classification of education (ISCED). The education systems differ between countries. The ISCED classification makes it possible to compare educational levels in spite of these differences, but the differences may nevertheless affect certain figures.

The EU figures up to 2002 are Eurostat estimates; there is no figure for 1998.

#### Early school leavers and persons with low educational attainment

The data are derived from the European Union labour force survey (LFS, see Box 1.4).

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.

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 European Union labour force survey (LFS) (see Box 1.4) and relate to all education or training whether or not relevant to the respondent's current or possible future job.

Lifelong learning refers to persons aged 25 to 64 who stated that they received education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding those who provided no answer to the question on 'participation to education and training'.

From 27 October 2006, this indicator is based on annual averages of quarterly data instead of one unique reference quarter in spring. This improves both the accuracy and reliability of the indicator thanks to a better coverage of all weeks of the year and an increased sample size. The 1999, 2000 and 2001 EU figures are estimated values.

The 2003 values contain a break in series compared with figures from previous years. From 2003, due to the implementation of a continuous survey (i.e. survey covering all weeks of the reference quarter), data refer to weeks 14 to 26 (quarter 2) except for:

- IE and UK (weeks 10 to 22)
- DE (one week in March/April in 2003 and 2004).
- DK, EL and SE (quarter 1)
- FI (quarter 1).

Until 2002, the reference period was as follows:

- one to three single weeks in April-June for DE, IT, LU and IS,
- 4 to 13 weeks in the first quarter in FR and AT,
- 13 weeks that correspond to the season spring in UK and IE,
- 13 weeks from April to June in the rest of the countries.



# Demographic changes

8

**Strategy 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'*



## Policy Background

In June 2006, the European Council renewed the EU sustainable development strategy identifying as the overall objective related to social inclusion, demography and migration '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.'

The post-war baby boom led to a bulge in the population pyramid that has gradually been working its way through the age groups: those born in the late 1940s are already reaching retirement age. The boom lasted well into the 1960s and this generation will continue to reach retirement age over the next 25 years. However, there are other, longer-term structural factors which are also influencing the age distribution of the population. Europeans are living longer than they used to and their birth rate has fallen well below the level needed to sustain a stable population. Although immigration may compensate to a very limited extent for these effects, current levels are too low to make any significant contribution. As a result the balance between the generations is changing and the numbers of middle-aged and elderly people are growing in relation to the young.

These demographic changes have profound implications. The European Council, at its meeting in Lisbon in March 2000, requested an assessment of whether adequate concrete measures were being taken to 'ensure the long-term sustainability of public finances, examining the different dimensions involved, including the impact of ageing populations'. At Stockholm, in March 2001, it was 'agreed to set an EU target for increasing the average EU employment rate among older women and men (55-64) to 50 % by 2010', and in June of the same year, the conclusions from the Gothenburg Council emphasised the need for a comprehensive approach to meet the challenges of an ageing society. The Laeken Council (2002) also set out objectives in the area of pensions, including adequacy of old-age income and financial sustainability of pensions systems, and the Barcelona Council (2002) prepared orientations in the field of health care and care for the elderly based on three objectives (accessibility, quality, financial sustainability of systems), while recognising at the same time that all health systems in the EU are based on the principles of solidarity, equity and universality.

At the Brussels meeting in March 2003 the European Council urged Member States 'to maintain the momentum of reform of national labour markets by focusing on increasing labour supply particularly amongst older people, women, immigrants and young people; encouraging active ageing, by discouraging early retirement incentives', and stressed that the 'reform agenda must now also address more effectively the challenges from ageing populations if it is to secure the long-term sustainability of public finances'.

## Main changes

**Table 8.1: Evaluation of changes in the demographic changes theme (from 2000) <sup>(202)</sup>**

	EU-27	EU-15
<b>Employment rate of older workers</b>		
<b>Demographic changes</b>		
Life expectancy at age 65 by gender		
male	:	
female	:	
Total fertility rate	*	
Net migration, by main age groups		
<b>Old age income adequacy</b>		
Aggregate replacement ratio	:	:
At-risk-of-poverty rate for persons aged 65 years and over	:	:
<b>Public finance sustainability</b>		
General government consolidated gross debt	*	
Average exit age from the labour market	*	



**LEGEND:**

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available
- \* refers to EU-25

<sup>(202)</sup> Following a change in the main data source used for the indicators related to old age income adequacy (from ECHP to EU-SILC), the possibility to make comparisons over time is limited. However, EU-SILC data are available for all EU-25 Member States from 2007 on (survey year 2005) and provide EU harmonised and comparable data on which to base a fair comparative assessment across the EU. See Box 7.3 in the methodological notes for the chapter on social inclusion.

The employment rate of older workers, although still low, has been increasing more rapidly since 2000. Continued increase is needed to offset the increase in dependency resulting from demographic change. Although life expectancy at the age of 65 especially for men is continuing to increase it is not accompanied by fertility rates sufficiently high to sustain the balance between the generations. This will lead to further increases in the numbers of pensioners relative to those of working age. Even if the decrease in the population could be avoided by a replacement fertility rate, population ageing is bound to progress further due to this increasing life expectancy. As a result, pension systems and public finances risk being stretched to meet future demand. Higher levels of inward migration may augment the younger sections of the population.

Employment for the 55-64 year old-age group has increased from 36.2 % in 1997 to 36.9 % in 2000, and then to 43.5 % in 2006 in the EU-27, but is still at much lower levels than the 25-54 category. Raising the employment rate of older workers to 50 % represents a challenge for the coming years, even though recent changes are encouraging, with an average annual increase of 2.8 percentage points between 2000 and 2006 in the EU-27, compared to 0.6 percentage points per year between 1997 and 2000.

The old-age dependency ratio (those aged over 65 years as a percentage of the population aged 15 to 64 years) is increasing, indicating an ageing of the population in the EU-25 as a whole. Eurostat projections show that the ratio will double between 2004 and 2050. By the middle of the century, there will be one person aged 65 or over for every two aged between 15 and 64. In the coming decades, an ever-smaller working age population will have to support an ever-greater number of pensioners.

**The employment rate of older workers is growing, but remains low**

**Demographic changes provide both encouraging and worrying signs for the future**



Life expectancy at age 65 grew for both males (+0.9 % on average per year) and females (+0.7 %) in the EU-15 over the period 1990-2000. From 2000 to 2002, this rate increased for males to an average annual rate of 1.3 %, and decreased to 0.3 % for females, so that at age 65 a man could expect to live a further 16.3 years and a woman 19.9 years. Although this trend towards longer life expectancy is positive, it is accompanied by persistently low fertility rates. As a result the old-age dependency ratio will inevitably increase, placing a high burden on public finances and pension schemes. This trend is, however, dampened to some extent by current levels of immigration. Net migration in the EU-27 has averaged at 1.6 million per year between 2000 and 2005 and represents a significant factor in population growth.

**The elderly are at higher risk of poverty than the population as a whole**

Although the data currently available are insufficient to show EU trends, it is clear that incomes decline in all Member States following retirement. The risk of poverty for the older members of the population exceeds the risk incurred by the total population by two or three percentage points for the EU-25, and stood at 19 % in 2005.

**There has been some progress in the sustainability of public finances although further increases in expenditure are projected**

The average exit age from the labour market increased in the EU-25 from 59.9 years in 2001 to 60.9 in 2005. Progress is needed at more than twice this rate to achieve the 2010 target. Following a period of growth of 2.6 % per year between 1995 and 2000 in the EU-15, pensions expenditure grew at the slower average rate of 1.8 % per year between 2000 and 2004. Other old-age care expenditures increased steadily from 0.33 % of GDP in 1991 to 0.54 % in 2004. General government gross debt in the EU-25 decreased as a share of GDP by 0.7 percentage points between 2000 and 2006. At the end of this period it stood at 2.2 points above the 60 % reference value. Projections for the EU-25, assuming no future policy change, estimate that by 2050 public pensions could rise by a further 2.2 % of GDP, equivalent to the projected rise in health care (1.6 % of GDP) and long-term care (0.6 %) combined. In those countries where there are projected positive developments in the theoretical replacement ratio, there is also a tendency towards increasing future expenditure on public pensions.

### Rationale for the selection of indicators

The indicators selected for this theme are related to the objectives of the renewed sustainable development strategy key challenge 'social inclusion, demography and migration' (see Box 7.1 in the chapter on social inclusion).

The selected indicators are based on these objectives as well as on the sub-objectives of the European Employment strategy, which aims at increasing access to the labour market (see economic development chapter overview) and the indicators selected under the Lisbon strategy's 'open method of coordination' which applies in the field of pensions.

The headline indicator of the demographic changes theme focuses on the elderly population of working age. The 'employment rate of older workers' monitors progress with respect to an important part of the strategy's operational objective of 'significantly increasing the labour market participation of women and older workers according to set targets', which is also one of the Lisbon targets. Other problems to be tackled by the Union for mitigating the effects of an ageing population are covered by a set of indicators dealing with:

- **Demographic changes:** the indicators 'life expectancy at age 65 by gender' and 'total fertility rate' are important for an understanding of the main trends affecting population growth and structure. A further factor is the 'net migration rate', which it is only possible to present here as a total. In the future it is hoped to be able to present an age breakdown of migrants. A contextual indicator on the 'old-age dependency ratio' gives an approximation of the ratio between the retired and working-age populations, and as such pro-

vides an indication of the pressure on old-age-related social protection expenditure. This indicator is also projected into the future in order to illustrate the potential future impact of current trends;

- **Old age income adequacy:** the ‘aggregated replacement ratio’ compares the pension income of retired people to the income from work of people approaching retirement. The numbers of elderly people at risk of poverty is expressed in the indicator ‘at-risk-of-poverty rate for persons aged 65 years and over’;
- **Public finance sustainability:** the overall state of public finances is illustrated by an indicator on ‘general government consolidated gross debt’. One of the important ways to minimise pressure on public expenditure is to extend the period of working life and this is monitored by an indicator on ‘average exit age from the labour market’. These two indicators are complemented by three contextual indicators. The indicator on ‘changes in public pensions expenditure’ monitors the year-on-year change in these expenditures, whilst the indicator ‘public expenditure on care for the elderly’ shows the development in a number of social protection expenditures for elderly people. The third contextual indicator, ‘changes in projected theoretical income replacement ratio’, is not presented in the main body of the chapter. Instead it has been analysed in the context of a set of projections of future age-related public spending at the end of the chapter (Box 8.1).

Although not exhaustive, the set of indicators covers the major challenges resulting from the demographic changes expected in Europe over the next decades. No indicator is currently available on the rate of employment of disabled people.

## Potential linkages

The size of the population is directly linked to other demographic factors, such as fertility rates, life expectancies and migration. Population growth occurs when the inputs (births, immigration) exceed the outputs (death, emigration). The age structure, and therefore the old-age dependency ratio, is also linked to the same demographic factors, being a function of the birth rate over time, the age distribution of immigrants and emigrants, and life expectancy. Old age income adequacy and public finance sustainability are of course closely linked to demographic factors.

Demographic factors, and in particular the fertility rate, are influenced by economic factors such as GDP, and the state of the labour market (employment, unemployment, gender pay gap). The state of the labour market also influences the aggregate replacement ratio, and the state of the economy in general has an impact on public finance sustainability.

The size of the population, in turn, influences the size of the economy and the cost of social services, such as education and health. The age structure of the population has additional influence on these same issues. A large population of working age will reinforce the possibilities for economic growth. On the other hand, the extent to which younger or older, especially retired, people dominate the population will have consequences on the level of expenditure required for education, health care and pensions. The age structure of immigrants and emigrants is also relevant in this respect.

Social factors such as the risk of poverty rate also have an influence on demographic factors, as do determinants of health such as lifestyle, food safety, the risks from toxic chemicals and other hazardous substances, and environmental pollution.

Linkages within demographic changes

Linkages with the economic dimension

Linkages with the social dimension and health



Migration is strongly linked to social issues. Whilst highly educated emigrants may deplete the skill level of the work force, this may or may not be compensated for by the educational and skill level of immigrants. Immigrants also add cultural and genetic diversity to a population, although unless they are adequately integrated into society, they may suffer discrimination and social exclusion over several generations.

#### Linkages with the environmental dimension

The size of the population influences the demand for land, energy, and other natural resources, and affects pressures and impacts on the environment, such as emissions to air, soil and water, and quantities of waste generated. There may, however, also be efficiencies of scale, where the costs and impacts per inhabitant may be reduced, via increased eco-efficiency and resource productivity. A change in the age structure of the population is also likely to have an impact with different consumption patterns of individuals in different phases of life.

#### Linkages with global partnership

International migration is likely to be influenced by factors affecting the quality of life in developing countries, such as economic hardship, environmental degradation, political oppression and civil disorder. Immigration supplies highly educated skilled workers and professionals as well as less-educated manual workers. It is often argued that migration is responsible for creaming off the most skilled and highly educated, the very people that developing countries most need. However, migrants can also stimulate positive change in their countries of origin by sending money, information and ideas back to their families.

#### Further reading on demographic changes in Europe

Green Paper Confronting demographic change: a new solidarity between the generations, COM(2005) 94

*Adequate and sustainable pensions*, Joint report by the Commission and the Council, March 2003

Adequate and sustainable pensions, Commission services paper, 2006

Joint reports for social protection and social inclusion, 2005, 2006, 2007

Modernising social protection for the development of high-quality, accessible and sustainable health care and long-term care: support for the national strategies using the 'open method of coordination', Commission communication, COM(2004) 304

'The impact of ageing on public expenditure: projections for the EU-25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004–50)', Report prepared by the Economic Policy Committee and the European Commission (Directorate-General for Economic and Financial Affairs), *European Economy* Special report No 1/2006

The demographic future of Europe — from challenge to opportunity, COM(2006) 571

*Demographic outlook — National reports on the demographic developments in 2005*. Eurostat Methodologies and working paper, 2007 edition



## Employment rate of older workers



**Definition:** This indicator is defined as the **total employment rate for persons aged between 55 and 64**. The employment rate is calculated by dividing the number of persons aged between 55 and 64 in employment by the total population 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.

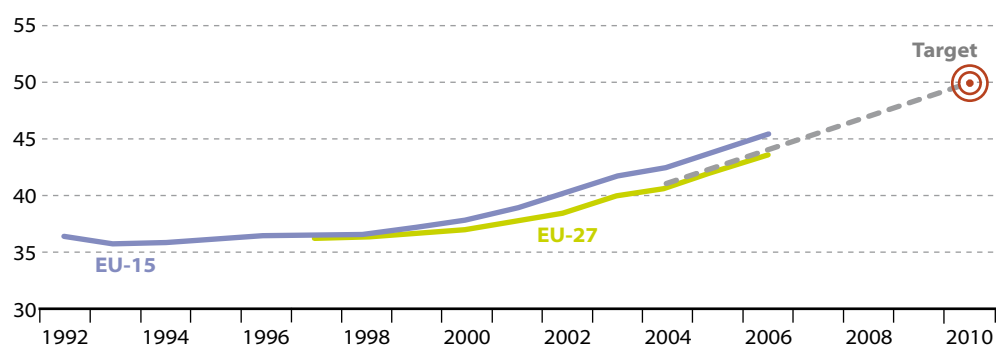
Population projections by Eurostat <sup>(203)</sup> indicate that, mainly as a result of persistently low fertility rates <sup>(204)</sup>, the future population of the EU will become smaller and its average age will increase. The size of the working age population (15-64 years) will decrease in absolute terms and relative to the over-65s (see indicator on old-age dependency ratio). These demographic changes make it increasingly important to use the full potential of labour supply in order to ensure economic growth, tax revenues and social protection systems, including adequate pensions.

Employment among older people is becoming more important with these ongoing changes in the age structure of the workforce and the increase of the old-age dependency ratio. Longer working lives result in more contribution years and fewer benefit years, thus contributing directly to the adequacy and sustainability of the pension system. But many older workers withdraw from the labour force at a relatively young age. This indicator is intended to monitor progress towards the objective, set at the Stockholm European Council of March 2001, that at least half of the EU population in the 55-64 age group should be in employment by 2010. This overall objective affects different policy areas such as the increase of the employability of older workers through the promotion of lifelong learning, safe and healthy working conditions and a more inclusive labour market for the elderly. The Barcelona European Council of March 2002 further concluded that efforts should be stepped up to increase opportunities for older workers to remain in the labour market. To meet this objective it proposed that a five-year delay in the average age at which people withdraw from the labour force (see indicator in this chapter) should be sought by the end of the decade. In the renewed sustainable development strategy this operational objective is expressed as 'significantly increasing the labour market participation of women and older workers according to set targets'.

### Indicator relevance

<sup>(203)</sup> Long-term population projections at national level, Statistics in focus, 3/2006, Eurostat.

<sup>(204)</sup> The influence of life expectancies and immigration is also not negligible.



**Figure 8.1:** Employment rate of workers aged 55-64 (%)

Source: Eurostat.



### Analysis

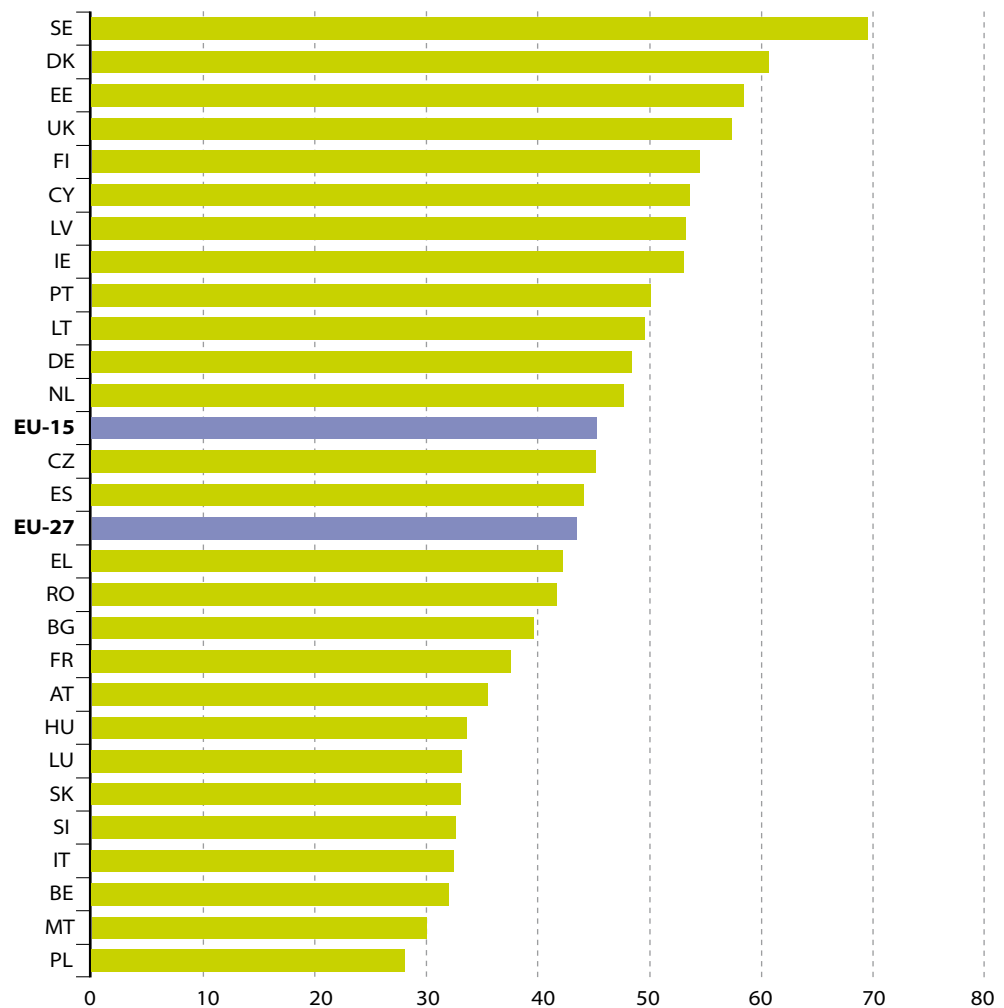
As at 2006, the total employment rate stood at 64.3 % in the EU-27 and 66 % in the EU-15 (see economic development chapter). However, these figures mask discrepancies between the employment rates for different age groups. Only 43.5 % of the EU-27 population (45.3 % in the EU-15) aged between 55 and 64 years were in employment, compared with 78 % (78.7 %) for the 25-54 group.

In 2001, only 38.8 % of the EU-15 population aged 55-64 were in work, around 2.7 % were unemployed and the remaining 58.5 % were inactive.

Raising the employment rate of older workers to 50 % represents a challenge for the coming years, even though recent changes are encouraging, with an increase of 6.6 percentage points between 2000 and 2006 in the EU-27, compared with 0.7 percentage points between 1997 and 2000.

**Figure 8.2:**  
Employment rate  
of workers aged  
55-64, 2006 (%)

Source: Eurostat.



The employment rate of older workers is uneven across countries, ranging from 28.1 % in Poland to 69.6 % in Sweden in 2006. In total, nine Member States have already achieved the target of at least 50 %. However, 11 Member States did not even have 40 % of older workers in employment.



A split by gender is also available on the Eurostat website, showing that the EU-27 employment rate for older males stood at 52.6 % in 2006, 17.8 percentage points higher than that of females. However, the gap between the genders stood at 21 percentage points in 1997 and has been closing. Since 2000 the employment rate of older females has increased at an average rate of 1.2 percentage points per year, compared with 0.9 for males.

There is also considerable variation in the gender gap between countries. In Estonia the employment rate for older females stood 1.7 percentage points higher than that of males in 2006. In all other countries the rates were higher for males than females. Relatively small gender gaps were observed in Finland (0.5 percentage points), France (4.9) and Sweden (5.4). The largest differences between the genders were in Malta (39.2 percentage points), followed by Cyprus (35), Greece (32.6), Spain (31.7) and Slovakia (30.9).



## Demography

## Life expectancy at age 65

**Definition:** The indicator is defined as **life expectancy at age 65**, by gender. It refers to the mean number of years still to be lived by a man or a woman 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).



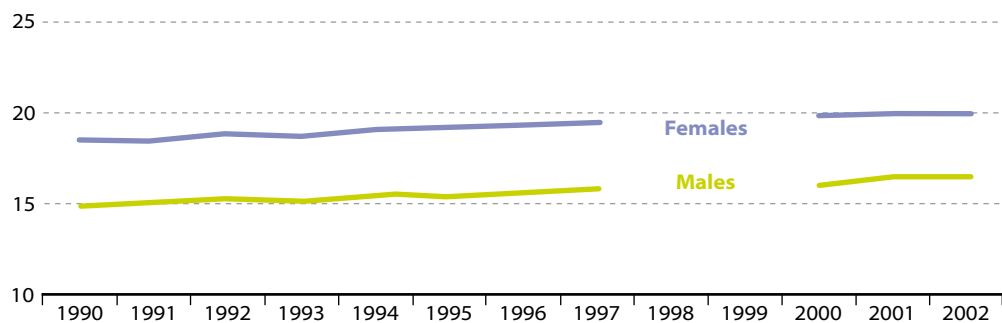
## Indicator relevance

The indicator reflects improvements in living conditions, especially in terms of wealth, housing, nutrition and health care. Although increased life-expectancy is advantageous to our society it also challenges the sustainability of public finances, the health care system and the provision of care for the elderly.

The renewed strategy calls for promoting 'good public health on equal conditions', and also encourages 'active and healthy ageing strategies'. It seeks to increase the quality of life of citizens as a precondition for lasting individual well-being.

**Figure 8.3: EU-15 life expectancy at age 65 (years)**

Source: Eurostat.



## Analysis

For many years there has been a trend towards increasing life-expectancy and during the 1990s life-expectancy at age 65 increased by about one and a half years for both men and women. The latter live on average 3.6 years more as a consequence of consistently higher mortality rates for men.

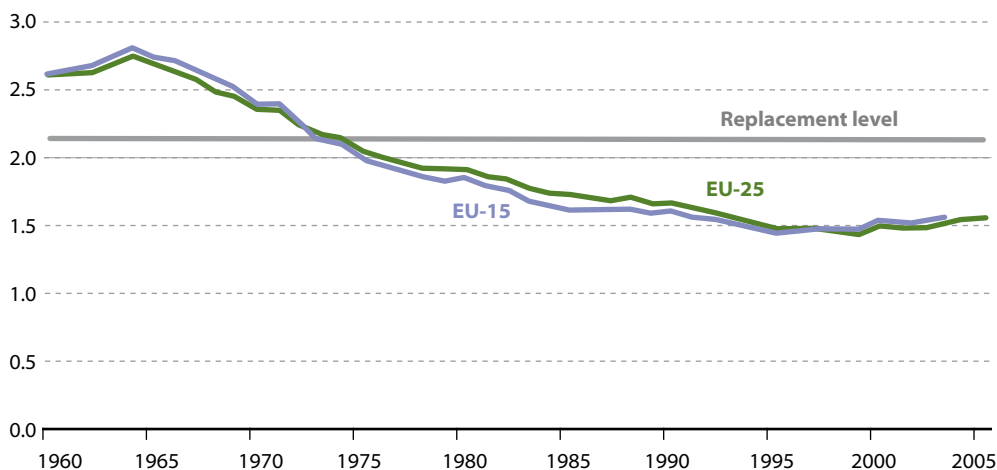
## Total fertility rate



**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 (the number of women at each age is assumed to be the same).

Future population size and age distribution within that population are to a very large extent determined by the total fertility rate. It is generally considered that at a level of 2.1, other things being equal, the total fertility rate would lead to a more-or-less stable population size and age distribution. Given the lifespan of a human being the trends in this indicator exert long-term impacts on the size and age structure of the population. For this reason it is necessary to consider the development of the indicator over a rather long time frame. Periodic fluctuations in this indicator are normal, but sustained periods above or below the replacement level lead to a shift in the balance between generations and the need to plan for future demands on pension funds, social security and provision for education and care for the elderly. High fertility rates are seen as an asset for the economy as they will result, with a long time lag, in an increase in labour supply.

### Indicator relevance



**Figure 8.4: Total fertility rate**  
(number of children per woman)

Source: Eurostat.

Total fertility rates fell steadily across the EU from a level well above the replacement level in the mid-1960s to a level of about 1.5 from the mid-1990s. Since then they have stabilised at this very low level, although there is perhaps an indication of slight growth over recent years, from 1.42 children per woman in 1999 to 1.52 for the EU-25 in 2005. Nevertheless this recent turnaround follows a period of 30 years of declining birth rates. This will in turn lead to smaller numbers of adults of childbearing age, which will reduce further the numbers of babies entering the population.

### Analysis

The current low fertility rates are the result of women postponing births to later ages than in the past, as well as the lower number of children born to each woman. 'Delayed childbearing does not affect the total number of children women have over the course of their lives, provided they do not forgo postponed births altogether. However, it reduces the number of children born during the period in which the delay is occurring, which lowers birth rates in that period and contributes to the ageing of the population'<sup>(205)</sup>.

<sup>(205)</sup> Lutz W., O'Neill, B., Scherbov, S. (2003), 'Europe's population at a turning point', *Science*, Vol. 299, 1991-92.



## Demography

## Net migration

**Definition:** Net migration is the **net balance between immigration to and emigration from an area**, expressed as the number of persons per year.



## Indicator relevance

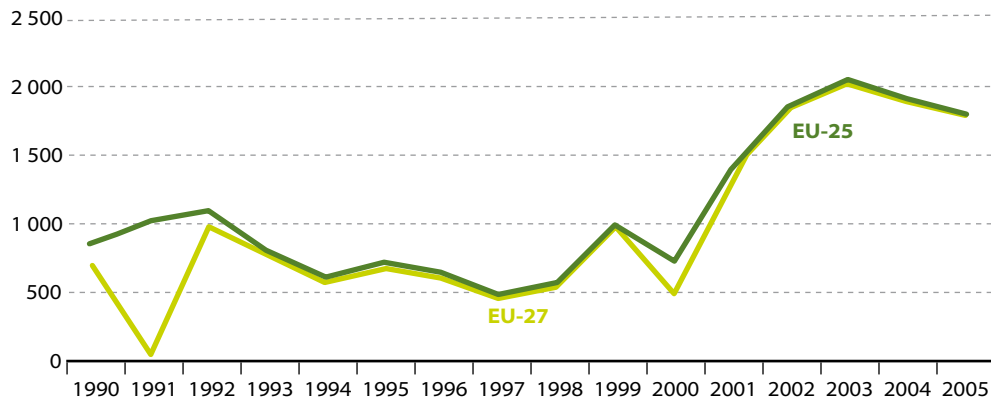
The EU as an 'area of freedom, security and justice' has a strong tradition as a shelter for asylum-seekers and refugees. If illegal migration must be fought against, as it generates problems linked with the integration of the newcomers and can give rise to trafficking in human beings, illegal employment and even, terrorism, 'legal migration can play an important role in enhancing the knowledge-based economy in Europe, in advancing economic development, and thus contributing to the implementation of the Lisbon strategy. It could also play a role in partnerships with third countries'<sup>(206)</sup>. Moreover, immigration is considered a chance to counter-balance the effects of ageing resulting from increasing life expectancy and decreasing fertility.

<sup>(206)</sup> Conclusions from the Brussels Council held in November 2004.

An objective of the renewed sustainable development strategy is to continue 'developing an EU migration policy, accompanied by policies to strengthen the integration of migrants and their families, taking into account also the economic dimension of migration'. A related objective is to significantly increase the labour market participation of migrants.

**Figure 8.5:**  
Net migration  
(1 000 persons  
per year)

Source: Eurostat.



## Analysis

Over the decade 1990 to 2000, net migration fell in both the EU-25 (at the annual average rate of -1.7 %) and the EU-27 (-3.2 % per year). In comparison with developments since then, this can be seen as a relatively stable period for migration, except for the year 1991, when the EU-27 showed a large fall in net migration due mainly to an increase in emigration from Romania in 1990/91 (see Eurostat website for national data). Since 2000, however, the average annual growth rates have risen substantially: to 20 % in the EU-25 and 30 % in the EU-27. The peak was in 2003 when it is estimated that the EU population increased by more than 2 million as a result of migration.

## Old-age dependency ratio



**Definition:** The indicator is defined as the **number of persons aged 65 and over expressed as a percentage of the number of persons aged between 15 and 64**. It should be noted that projections are not forecasts and they are based on assumptions about the future, not on certainties.

The old-age dependency ratio is an approximation of the ratio between the retired and working age populations, or between beneficiaries and contributors. As such it reflects the potential pressure on public expenditure resulting from the age structure of the population.

### Indicator relevance

The renewed sustainable development strategy recognises that ‘taking into account the ageing of populations in all European countries, the sustainability and adequacy of pensions will remain an important issue for many decades’. Measures such as structural reforms of the labour market and old-age insurance and pension schemes, particularly with the aim of raising the average retirement age, encouraging inwards migration, growth in productivity and technological developments are necessary to offset the consequences of the trend in the ratio and guarantee adequate social protection without jeopardising the sustainability of public finance systems. In addition to mitigating the consequences of population ageing, population ageing itself could be moderated by increases in fertility rates.

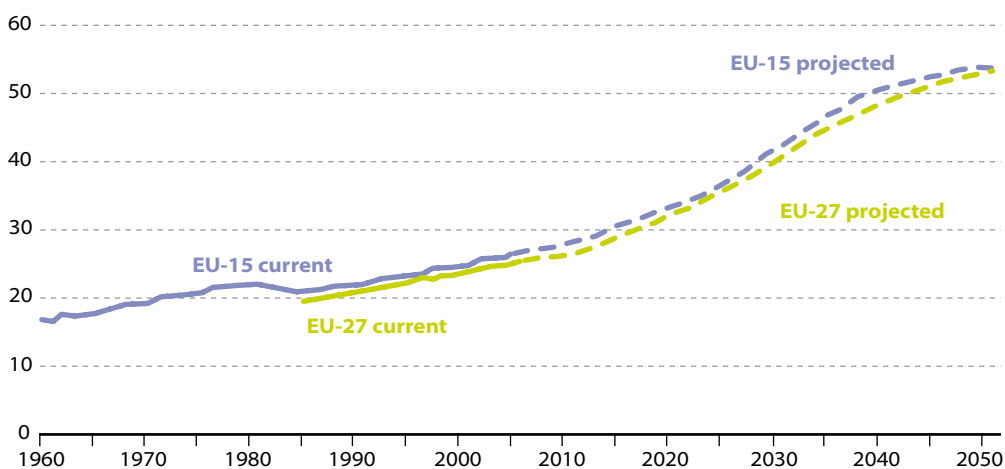


Figure 8.6: Old-age dependency ratio (%)

Source: Eurostat.

The old-age dependency ratio has grown at an average rate of about 0.3 percentage points per year since 1990 in both the EU-15 and the EU-27. However, it is important to examine the development of this indicator over a long time frame as changes are gradual and highly dependent on the past. In particular, the impact of the baby boom generation is significant: while it increased the working-age population until about 2000, thus reducing the old-age dependency ratio, thereafter its impact is in opposite direction. Whereas there was one pensioner for eight persons of working age in 1960, this has risen to one pensioner for four persons of working age in 2005. And it is expected that by 2050 there will be one pensioner for only two persons of working age, placing a huge burden on the financial resources of the future working population.

### Analysis



As the baby boom generation moves into retirement between now and 2030, the elderly population will inflate at a faster rate than has been seen in recent years. At the same time, due to the low fertility rates of the past 40 years the population of working age will start to diminish. Immigration levels are not expected to be sufficient to have more than a marginal impact on this scenario. Although there are uncertainties as to the exact level of the future old-age dependency ratio, the fact is that the population is getting older and further ageing is inevitable. This fore-knowledge places us in a strong position to plan and gradually introduce the changes needed to adapt our societies to demographic shift.



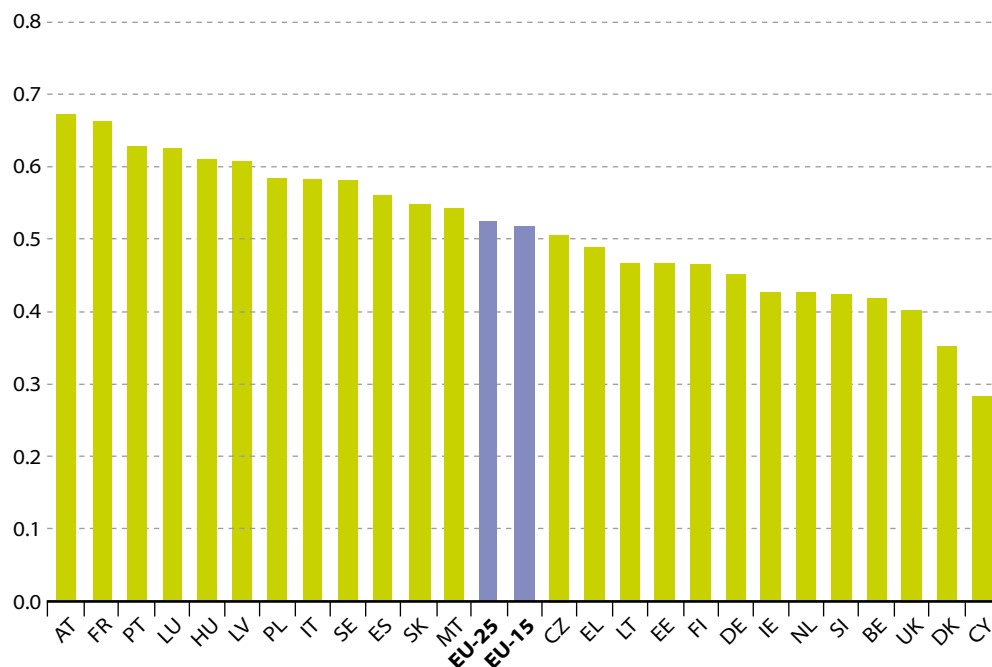
## Aggregate replacement ratio



**Definition:** The indicator is defined as the **ratio of the median individual gross pensions of 65-74 relative to median individual gross earnings of 50-59**, 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.

The purpose of pensions is to provide an adequate level of income to those no longer in work. Several European Councils, from Lisbon to Barcelona, have highlighted the challenge of an ageing population and its implications for the maintenance of adequate and sustainable pensions. These concerns are reflected in the objectives of the renewed sustainable development strategy related to inter-generational solidarity, increasing the quality of life and reducing the number of people at risk of poverty and social exclusion.

### Indicator relevance



**Figure 8.7:**  
Aggregate replacement ratio, 2005

NB: Eurostat estimates.

Source: Eurostat.

Income levels necessarily decline following retirement. In 2005 the EU-25 aggregate replacement ratio was 0.52. In other words the income of 65-74-year-olds was about 52 % of the income of 50-59-year-olds, excluding other benefits. In the best cases, in 2005 the aggregate replacement ratio exceeded 0.6 in several countries (Austria, France, Portugal, Luxembourg, Hungary and Latvia). However, there were also a number of Member States where this indicator was below 0.4.

### Analysis



## Old-age income adequacy

## At risk of poverty rate for persons aged 65 and over

**Definition:** The indicator is defined as the **share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income** (after social transfers). Retirement and survivor's pensions are counted as income before transfers and not as social transfers. The use of equivalised incomes means that this indicator takes account of income from other household members.

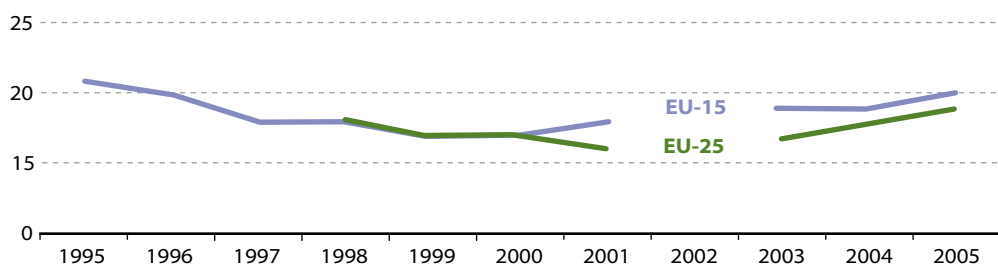


### Indicator relevance

The at-risk-of-poverty indicator measures the percentage of people below the at-risk-of-poverty threshold. People whose income lies below that reference level are considered to be at risk of income poverty. Tackling poverty and social exclusion is essential as these problems have a high social cost.

In the renewed sustainable development strategy this indicator relates to the 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 implies ensuring decent wage levels during the working age period by maintaining skill levels, so as to generate decent pensions.

**Figure 8.8: At risk of poverty rate for persons aged 65 and over (%)**



*NB:* Eurostat estimates. Due to a change of data source, there is a disruption in the time series availability of this indicator. 2005 is the first year where EU-SILC data are available for all EU-25 countries. See box 7.3 for further details.

Source: Eurostat.

### Analysis

At 19 % in the EU-25, compared with 20 % in the EU-15, the risk of poverty is higher by 2 or 3 points for the over-65s compared to the population as a whole. The poverty risk of single adults aged 65 and over is very unevenly distributed across Member States, with values ranging from 7 % in Luxembourg, the Netherlands and Poland, to 62 % in Ireland and 70 % in Cyprus.

## General government gross debt



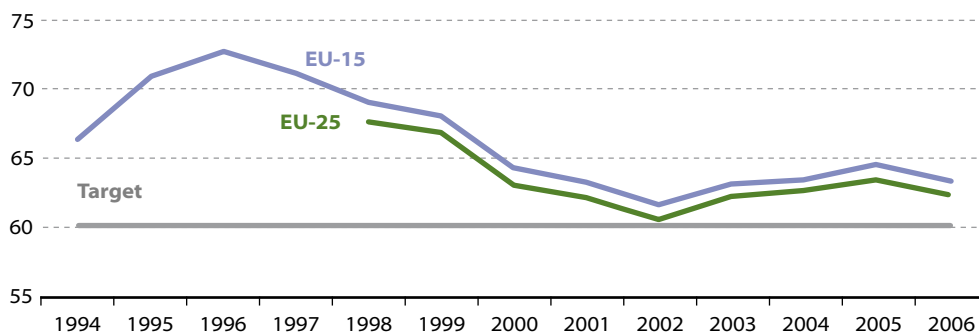
**Definition:** The indicator is defined as **general government gross debt as a percentage of GDP** at current market prices. Gross debt refers to the amount of money borrowed by the general government (i.e. state, local government and social security funds) to support its financing requirements.

General government sector comprises the subsectors of central government, state government, local government and social security funds.

The comparison between general government debt and GDP provides an indication of the state of health of public finances by showing the extent to which a government has relied on borrowing in order to cover its expenditure. Healthy public finances are one of the criteria of the Stability and Growth Pact (1997) and are used to assess the eligibility of Member States to join the single currency. The ratio of euro-zone government debt to GDP should not exceed the reference value of 60 % unless the excess is exceptional and temporary and the ratio is diminishing substantially and continuously. Governments have the obligation to notify their debt statistics to the European Commission twice per year under the excessive deficit procedure.

A reduction in the level of debt also reduces future interest payments and thus creates more financial leeway for meeting the increasing needs of an ageing population (see indicator on old-age-dependency ratio). The renewed sustainable development strategy sees the need 'to modernise social protection systems and ensure their sustainability', and to 'reduce public debt at a satisfactory pace, raising employment rates and productivity, as well as reforming health care and long-term care systems'.

### Indicator relevance



**Figure 8.9: General government gross debt (%)**

Source: Eurostat.

Between 1996 and 2002 there was an overall improvement of general government debt, with an annual average decrease of 1.9 percentage points in the EU-15. However, the trend has been less favourable between 2002 and 2005, with an average increase of 0.9 percentage points per year in the EU-25 and 1.0 in the EU-15. 2006, however, marked a turning point in the consolidation of public finances. In 2006, the 60 % level was exceeded in 10 out of the 27 Member States, including Germany and France whose economic weight strongly influences the overall size of EU debt. The highest levels of debt were those of Greece (104.6 %) and Italy (106.8 %), while Estonia and Luxembourg were below 10 % (see country breakdown on the website). The EU-15 and EU-25 averages have been consistently above the threshold of 60 % since 1994.

### Analysis



## Public finance sustainability



## Average exit age from the labour market

**Definition:** The indicator gives the **average age at which active persons definitively withdraw from the labour market**. It is based on a probability model considering the relative changes of activity rates from one year to another at a specific age. The activity rate represents the labour force (employed and unemployed population) as a percentage of the total population for a given age. The indicator is based on the EU labour force survey. The survey covers the entire population living in private households. The definitions used follow the guidelines of the International Labour Office.



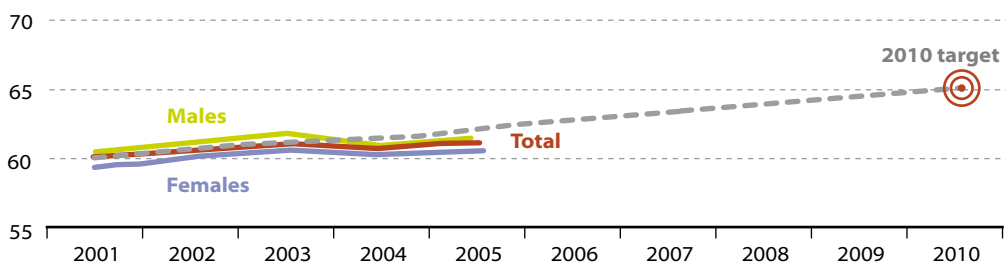
## Indicator relevance

The promotion of active ageing in the EU is reflected in two complementary targets. The Stockholm European Council of March 2001 agreed that half of the EU population in the 55-64 age group should be in employment by 2010 (see headline indicator). This can only be achieved by delaying the retirement age and the Barcelona European Council of March 2002 therefore concluded 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'. These targets are an integral part of the European employment strategy.

For the economy as a whole the increase in participation and employment rates of older workers is crucial for using the full potential of labour supply to sustain economic growth, tax revenues and social protection systems, including adequate pensions, in the face of expected reductions in the population of working age.

**Figure 8.10: EU-25 average exit age from the labour market (years)**

Source: Eurostat.



## Analysis

In 2001 the average exit age from the labour market for the EU-25 was 59.9 years, with men, on average, working about one year longer than women. By 2005 the average exit age had increased by only about one year relative to the 2001 level. This leaves a further four years to be shaved from the average retirement age by 2010.

## Change in pensions expenditure

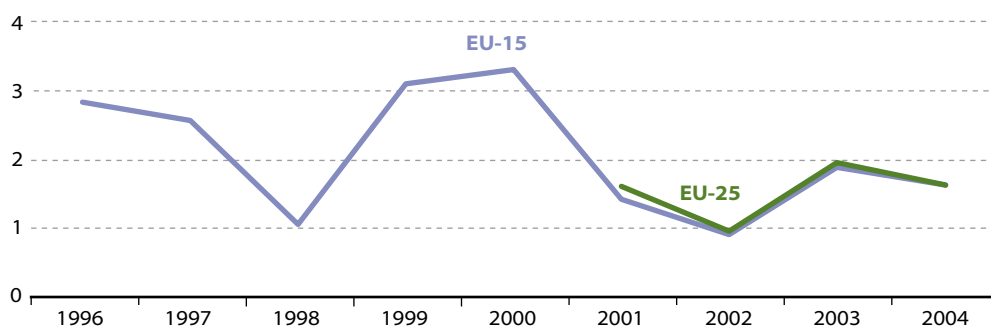


**Definition:** The indicator is defined as the **change in pensions expenditure at constant prices compared to the previous year**. Pensions include old-age pension, anticipated old-age pension, partial pension, disability pension, survivor's pension and early retirement benefit. They include social security and other public pensions, and, in part, occupational pensions and voluntary private pensions.

Pensions, like all social transfers, are intended to reduce the risk of poverty and to replace income from work for those who are no longer able or expected to work. They facilitate access to decent living conditions and participation in society. It should be noted that this indicator is not limited to old-age pensions.

In view of the ageing of the EU population, the sustainability and adequacy of pensions is, and will remain for decades, an important issue on the European agenda and the renewed sustainable development strategy sees the need to reform pension systems. The broad objectives set for pension systems by the Laeken Council, and later incorporated in the Lisbon strategy, are aimed at ensuring the adequacy and financial sustainability of pension systems. It is therefore important to consider changes in pensions expenditure along with the evolution of the aggregate income replacement ratio.

### Indicator relevance



**Figure 8.11:**  
Change in pensions expenditure  
(percentage change on previous year)

Source: Eurostat.

Following a period of growth of 2.6 % per year between 1995 and 2000 in the EU-15, pensions expenditure grew at the slower average rate of 1.8 % per year between 2000 and 2004. These rates are very slightly higher than the growth rate of GDP.

### Analysis

Projections for the EU-25 (see Box 8.1), assuming no future policy change, estimate that by 2050 public pensions could rise by a further 2.2 % of GDP, equivalent to the projected rise in health care (1.6 % of GDP) and long-term care (0.6 %) combined. Pensions expenditure is, of course, also linked to the adequacy of pensions, as is illustrated in Figure 8.15. In those countries where there are projected positive developments in the theoretical replacement ratio, there is also a tendency towards increasing future expenditure on public pensions.



## Public finance sustainability

## Expenditure on care for the elderly

**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.



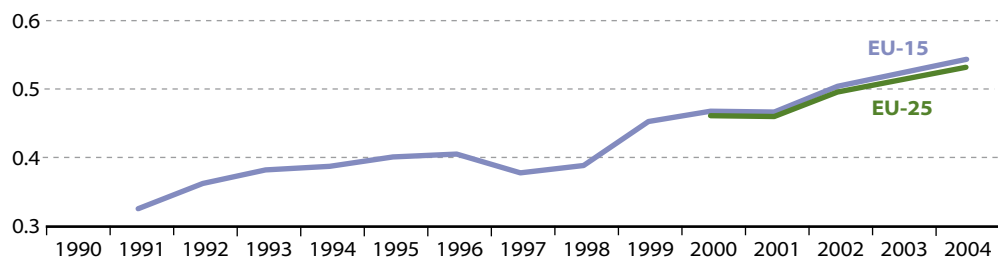
## Indicator relevance

The indicator shows the extent to which the elderly population is protected from a set of risks through specific social protection. Social protection is financed from both general government tax-funded transfers, accounting for approximately one third of the total, and social contributions paid by employers and protected persons (around two-thirds). It does not cover health care and long-term care.

As described elsewhere in this chapter, increasing life expectancies and low fertility rates are leading to an ageing of the population, and the number of elderly persons is expected to rise considerably in relation to the number of persons of working age by the middle of this century. As a consequence, the social protection expenditure on the elderly will also rise. For these reasons the Lisbon strategy requires Member States to maintain 'healthy' public finances in the long term, and the renewed sustainable development strategy proposes action to reform long-term care systems.

**Figure 8.12:**  
Expenditure on  
care for the elderly  
(% of GDP)

Source: Eurostat.



## Analysis

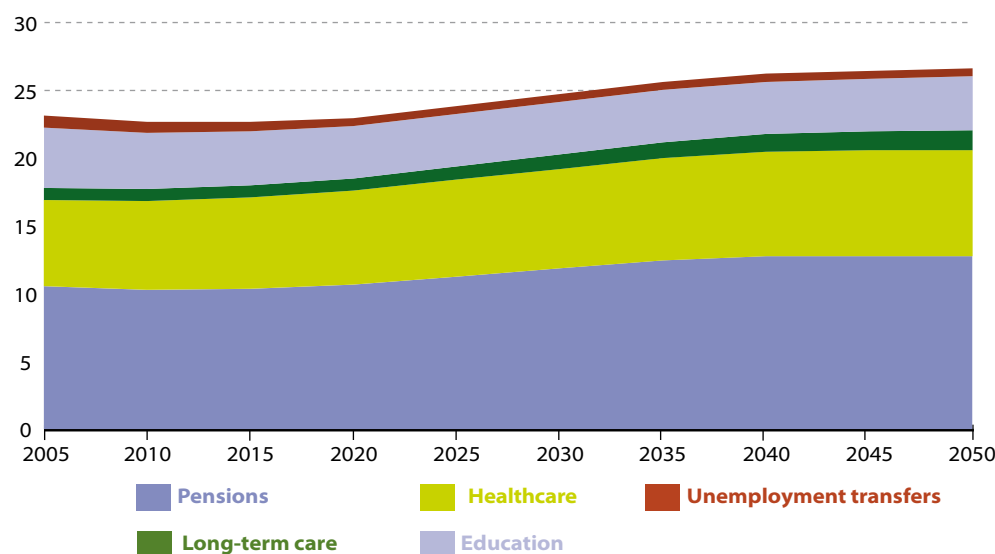
EU-15 expenditure on old-age care, expressed as a share of GDP, stood at 0.33 % in 1991 and 0.47 % in 2000, having grown in most of the intervening years. The average growth rate was 0.016 percentage points per year. Between 2000 and 2004, expenditure on old-age care, relative to GDP, has continued to grow, on average by 0.019 percentage points per year in the EU-15, compared with 0.017 in the EU-25. In 2004 the shares stood at 0.53 % in the EU-25 and 0.54 % in the EU-15.

### Box 8.1: EU-25 projections on public expenditure (2004-2050)

In 2003, the Ecofin Council <sup>(207)</sup> invited the Economic Policy Committee (EPC) to produce a new set of age-related public expenditure projections for all 25 Member States covering pensions, health care, long-term care, education, unemployment transfers and, where possible, contributions to pensions/social security systems. These projections are described in 'The impact of ageing on public expenditure: projections for the EU-25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-50); Report prepared by the Economic Policy Committee (EPC) and the European Commission (Directorate-General for Economic and Financial Affairs), *European Economy* Special report No 1/2006.

The projections are based on a common population projection and agreed common underlying economic assumptions that have been endorsed by the EPC. The projections assume 'no policy change', i.e. they only reflect enacted legislation but not possible future policy changes (although account is taken of provisions in enacted legislation that enter into force over time). The pension projections take account of legislation enacted by mid-2005. They are also made on the basis of the current behaviour of economic agents, without assuming any future changes in behaviour over time: for example, this is reflected in the assumptions on participation rates, which are based on the most recently observed trends by age and gender. While the underlying assumptions have been made by applying a common methodology uniformly to all Member States, adjustments have been made for several countries to avoid an overly mechanical approach that leads to economically unsound outcomes and to take due account of significant country-specific circumstances. The pension projections were made using the models of national authorities, and thus reflect the current institutional features of national pension systems. In contrast, the projections for health care, long-term care, education and unemployment transfers were made using common models developed by the European Commission in close cooperation with the EPC and its working group on ageing populations. The projection results show the combined impact of expected changes in size and demographic structure of the population, projected macroeconomic developments and assumed neutral evolution in health status of the population in each Member State of the European Union.

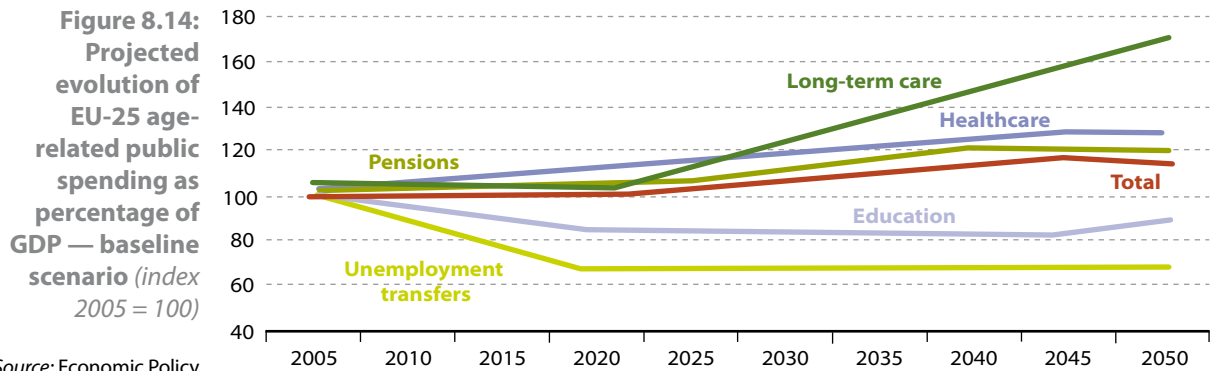
<sup>(207)</sup> 'Economic and fiscal implications of ageing populations – Mandate for further work in the Economic Policy Committee (EPC)', 2506th Council meeting, Economic and Financial Affairs, Brussels, 13 May 2003.



**Figure 8.13:**  
Projected evolution of EU-25 age-related public spending — baseline scenario (% of GDP)

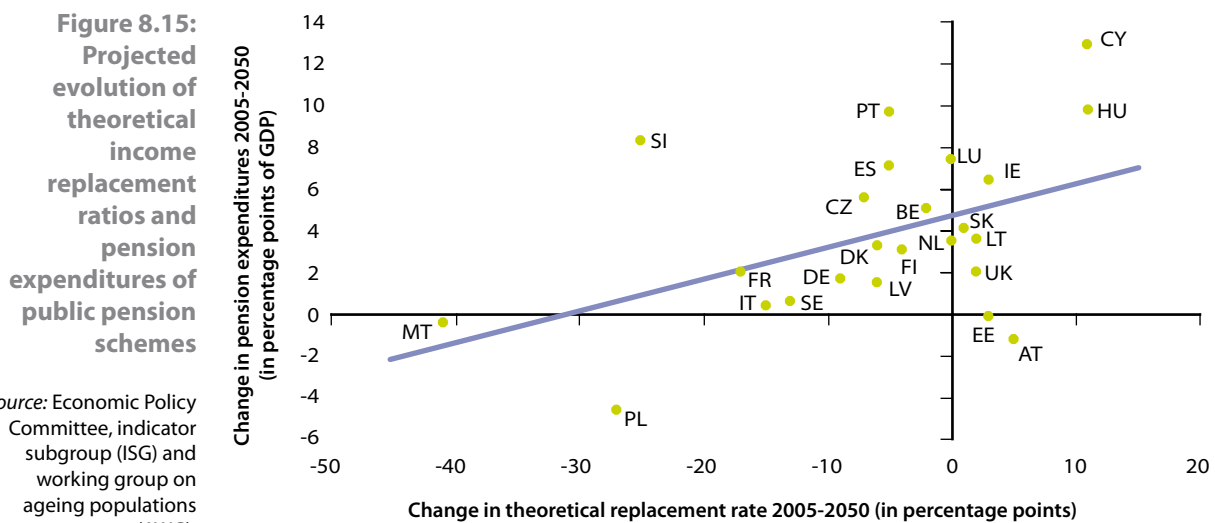
Source: Economic Policy Committee, indicator subgroup (ISG) and working group on ageing populations (AWG).

Overall, ageing populations are projected to lead to increases in public spending in most Member States by 2050 on the basis of current policies, although there is a wide degree of diversity across countries. For the EU-25 as a whole, public spending is projected to increase by 3.5 percentage points of GDP between 2005 and 2050, from 23.3 % in 2005 to 26.8 in 2050. Most of the projected increase in public spending will be on pensions (2.2 percentage points), health care (1.6 percentage points) and long-term care (0.6 percentage points). Potential offsetting savings in terms of public spending on education (-0.5 percentage points) and unemployment benefits (-0.3 percentage points) are likely to be limited. The budgetary impact of ageing in most Member States starts becoming apparent as of 2010. However, the largest increases in spending are projected to take place between 2020 and 2040.



Source: Economic Policy Committee, indicator subgroup (ISG) and working group on ageing populations (AWG).

In terms of growth rates it is long-term care which is expected to show the sharpest increases. This is because frailty and disability rises sharply at older ages, especially amongst the very old (aged 80+) which will be the fastest growing segment of the population in the decades to come.



Source: Economic Policy Committee, indicator subgroup (ISG) and working group on ageing populations (AWG).

The adequacy of pensions is linked to their financial sustainability. Theoretical replacement rates are projected to decline in 15 Member States, to stay the same in two Member States, and to grow in eight. In those countries where there are projected positive developments in the theoretical replacement ratio, there is also a tendency towards increasing future expenditure on public pensions.





## Methodological notes

### Employment rate of older workers

The indicator is based on the EU labour force survey (LFS) (see Box 1.4 in the methodological notes for the chapter on socioeconomic development).

### Life expectancy at age 65

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* <sup>(2008)</sup>. Absolute figures received from the national statistical institutes are validated by Eurostat before being sent to the database.

### Total fertility rate

The data are collected by the national statistical institutes and depend on the registration systems used in each country. There are no international recommendations for demographic statistics. Eurostat has established a permanent conversion method (Syscodem), which permits comparability of data compiled according to any definition from across the European Union. Moreover, a new methodology for the calculation of this indicator should be available from 2003 onwards.

### Net migration

The data are collected by Eurostat from the national statistical offices, based on the most recent census round or on the data extracted from a population register. The data refer to total population, broken down by age group. Since most countries either do not have accurate figures on immigration and emigration or have no figures at all, net migration is generally estimated on the basis of the difference between (total) population increase and natural increase between two dates. The statistics on net migration are therefore affected by all the statistical inaccuracies in the two components of this equation, especially population increase. Given these limitations, data are not fully comparable and include Eurostat estimates.

### Old-age dependency ratio

The current data are collected by Eurostat from the national statistical offices, based on the most recent census round or on the data extracted from a population register. The data include Eurostat estimates.

The projections are based on one among several scenarios of population evolution based on assumptions of fertility, mortality and migration. The current trend scenario does not take into account any future measures that could influence demographic trends. It should be noted that the assumptions adopted by Eurostat may differ from those adopted by national statistical institutes and therefore the results published by Eurostat can differ from those published by Member States.

### Aggregate replacement ratio

The data are drawn from the Community statistics on income and living conditions (EU-SILC) (see Box 7.3). 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.

### At-risk-of-poverty rate for persons aged 65 and over

The data are derived from the European Community household panel (ECHP) and the Community statistics on income and living conditions (EU-SILC) (see Box 7.3). The population consists of all persons living in private households. For more details, see headline indicator 'At-risk-of-poverty rate after social transfers' in the chapter on social inclusion.

### General government gross debt

Data are based on the European system of national accounts (ESA 95). Since this is one of the key aspects of convergence under the Maastricht Treaty there is a high degree of comparability within the EU-15 and the new countries and the data are generally complete and of high quality.

Debt is valued at nominal (face) value, and foreign currency debt is converted into national currency using end-year market exchange rates (though special rules apply to contracts). The national data for the general government sector are consolidated between and within the subsectors of general government. Basic data are expressed in national currency, converted into euro using end-year exchange rates for the euro provided by the European Central Bank. Data are compiled on an accrual basis.

### Average exit age from the labour market

The average age of withdrawal from the labour force is calculated on the basis of labour market statistics rather than receipt of a pension and should be distinguished from the average effective retirement age. The labour force survey (LFS) includes people receiving a pension but who are at work (at least one hour in the reference week). This can occur when pensioners work part time (e.g. to supplement the pension). The LFS also includes older workers receiving a pension while being unemployed (they are actively seeking employment). There are also the self-employed and the family workers who stay active until high ages. Therefore the average age of leaving the labour market may be higher than the average effective retirement age.

### Pensions expenditure

The data are taken from the European system of integrated social protection statistics (Esspros) see Box 8.2. 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

<sup>(2008)</sup> *Demographic statistics: Definitions and methods of collection in 31 European countries*, Eurostat, 2003.



function. It is defined as the sum of the following social benefits (followed by the function to which the category of benefits belongs):

1. Disability pension (disability function)
2. Early-retirement benefit due to reduced capacity to work (disability function)
3. Old-age pension (old-age function)
4. Anticipated old-age pension (old-age function)
5. Partial pension (old-age function)
6. Survivors' pension (survivors' function)
7. Early-retirement benefit for labour market reasons (unemployment function).

These benefits may be means-tested <sup>(209)</sup> or non-means-tested, including social security and other public pensions,

occupational pensions and voluntary private pensions. However, the coverage is less complete for the two latter categories than for public pensions.

The value of the 'pensions' aggregate has been calculated for all countries according to the above definition, regardless of differences between countries in the institutional organisation of social-protection schemes. Some benefits classed as 'pensions' (such as disability pension) may be paid to persons not yet having reached the statutory retirement age. The various categories of social protection are defined in the Esspros manual 1996. Under Esspros, pensions are recorded without deduction of tax or other compulsory contributions payable by beneficiaries on benefits. They do not, on the other hand, include the social contributions paid by pension schemes on behalf of their pensioners to other social-protection schemes (such as health schemes). Esspros records such payments under the heading of 'rerouted social contributions'.

### Box 8.2: European system of integrated social protection statistics (Esspros)

Data on social protection expenditure and receipts are harmonised according to the European system of integrated social protection statistics, as described in Eurostat's 1996 Esspros manual. Social protection expenditure includes provision of social benefits, administration costs and other expenditure (for example, interest paid to banks). Benefits provision represents the core of social protection expenditure. Expenditure on education is excluded. Social benefits are direct transfers in cash or kind by social protection schemes to households and individuals to relieve them of the burden of distinct risks or needs. Benefits via the fiscal system are excluded.

Benefits are classified according to eight social protection 'functions':

1. Sickness/health care benefits include mainly paid sick leave, medical care and provision of pharmaceutical products.
2. Disability benefits include mainly disability pensions and the provision of goods and services (other than medical care) to the disabled.

3. Old-age benefits include mainly old-age pensions and the provision of goods and services (other than medical care) to the elderly.
4. Survivors' benefits include income maintenance and support in connection with the death of a family member, such as survivors' pensions.
5. Family/children benefits include support (except health care) in connection with the costs of pregnancy, childbirth, childbearing and caring for other family members.
6. Unemployment benefits also include vocational training financed by public agencies.
7. Housing benefits include interventions by public authorities to help households meet the cost of housing.
8. Social exclusion benefits include income support, rehabilitation of alcohol and drug abusers and other miscellaneous benefits (except health care).

#### Expenditure on care for the elderly

The data are derived from the European system of integrated social protection statistics (Esspros) — see Box 8.2. 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
- assistance in carrying out daily tasks.

<sup>(209)</sup> The social benefits which are explicitly or implicitly conditional on the beneficiary's income and/or wealth falling below a specified level (Esspros manual, 1996, part.1.7.3, paragraph.124).





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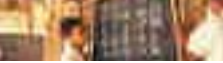
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# Global partnership

# 9

## **Strategy 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'*



## Policy Background

The 2006 renewed sustainable development strategy recognises as a key priority 'global poverty and sustainable development challenges'. The overall objective is 'to actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments'. In order to achieve this objective, the principal targets focus on increasing the level of aid, and its effectiveness and coherence, promoting sustainable development in the context of trade, fostering productive employment and decent work at global level, and contributing to international environmental governance (Box 9.1).

This explicit external dimension is a significant evolution from the 2001 Gothenburg strategy, which stopped at underlining that the external dimension needed to be further developed. This was expanded in a 2002 communication <sup>(210)</sup>, endorsed by the European Council in Barcelona, focusing on a number of priority issues largely taken up again in the renewed strategy. The latter also refers to a number of international commitments. At the UN Millennium Summit in 2000, the EU acknowledged, together with other nations, a global responsibility and agreed on concerted actions for global sustainable development, in the form of eight millennium development goals, which range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, and provide a framework for development planning for countries around the world, and time-bound targets by which progress can be measured (Box 9.2).

The World Trade Organization's (WTO) fourth Ministerial Conference in Doha (Qatar) in November 2001 launched a new round of trade negotiations, the Doha Development Agenda (DDA), comprising both further trade liberalisation and new rule-making, underpinned by commitments to strengthen substantially assistance to developing countries <sup>(211)</sup>. Better international governance and the promotion of sustainable development is the backdrop to the agenda. Future bilateral trade agreements will be placed under the overall objective of sustainable development.

Furthermore, the outcome of the International Conference on Financing for Development held in Monterey in March 2002 ('The Monterey consensus') recognised that achieving the internationally agreed goals demands a new partnership between developed and developing countries, including efforts to expand trade opportunities for developing countries, increased official development assistance and debt relief.

At the World Summit on sustainable development held in Johannesburg in 2002, the Heads of States and Governments expressed their commitment to the plan of implementation for Agenda 21, integrating the three pillars of sustainable development — economic development, social development and environmental protection — at local, national, regional and global levels. The Johannesburg Political Declaration and the plan of implementation <sup>(212)</sup> addressed major issues that humanity is facing, such as poverty, food security, desertification, environmental degradation, loss of bio-diversity, and climate change, which are aggravated by a predicted increase of world's population from today's 6 billion people to 9 billion by 2050.

In March 2005, EU Member States and the European Union signed the 'Paris Declaration on Aid Effectiveness', in which they committed themselves to continuing and increasing efforts in harmonization, alignment, and managing for results, and listed a set of monitorable actions and indicators to accelerate progress in these areas.

The 2005 UN MDG review World Summit further recognised in particular the importance of supporting fair globalisation and of promoting productive employment and decent work for all as a key element of national and international development and poverty reduction strategies and policies.

<sup>(210)</sup> Towards a global partnership for sustainable development, COM(2002) 82.

<sup>(211)</sup> For the purpose of this chapter, 'developing country' means a country of the DAC list of aid recipients of the Development Assistance Committee of the OECD.















<sup>(212)</sup> *Report of the World Summit on sustainable development*, Johannesburg, South Africa, 26 August to 4 September 2002. Chapter 1: resolution 1, resolution 2 and annexes. United Nations, New York, 2002.

In 2006, the Council, the European Parliament and the Commission jointly agreed 'the European consensus on development', recalling that the principal aim of the European Union's development policy is the eradication of poverty, in the context of sustainable development <sup>(213)</sup>, and setting out common objectives, principles and policy coherence commitments for development cooperation, as well as a renewed development policy.

<sup>(213)</sup> The European consensus on development. 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.




## Main changes

**Table 9.1: Evaluation of changes in the global partnership theme <sup>(214)</sup> (from 2000)**

	EU-27	EU-15
<b>Official development assistance (ODA)</b>	:	
<b>Financing for sustainable development</b>		
Bilateral ODA dedicated to social services	:	
Bilateral ODA dedicated to debt	:	
Share of ODA allocated to low income countries	:	
Share of FDI allocated to low income countries	:	
Financing for development	:	
Untied ODA	:	
<b>Globalisation of trade</b>		
EU imports from developing countries		
Share of imports from least developed countries		
<b>Global resource management</b>		
CO <sub>2</sub> emissions per capita		
Bilateral ODA dedicated to water supply and sanitation	:	



### LEGEND:

-  favourable change/ on target path
-  no or insufficient change
-  unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available

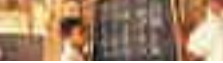
<sup>(214)</sup> Total ODA was evaluated over the period 2000 to 2006. However, at the time of writing, data for subcategories of ODA and other ODA related indicators were only available up to 2005, and were therefore evaluated from 2000 to 2005. ODA per capita, and the total breakdowns of ODA, FDI and imports were not evaluated as they are contextual indicators.

Global partnership indicators show positive signals in most policy areas, particularly in financing for sustainable development, although the positive trend in ODA stalled in 2006. Progress is more nuanced for the share of EU imports from least developed countries and EU CO<sub>2</sub> emissions per capita.

After a low around the year 2000, there was a sharp increase in the EU-15 ODA/GNI contributions, resulting in an increase from 0.32 % to 0.44 % between 2000 and 2005, which corresponds to an average annual growth of more than 17 % of disbursed amounts in absolute value. However this growth stalled in 2006. The EU exceeded its collective 2006 target of 0.39 %, but it fell slightly behind the 2010 intermediate target path. Few countries have achieved the UN target of 0.7 % and four countries are below the 2006 individual national targets of 0.33 %. The increase in ODA translates into a contribution towards ODA by each European citizen of EUR 120 in 2006, versus EUR 73 in 2000.

Bilateral ODA commitments increased by 13.2 % per year on average between 2000 and 2005, and were clearly targeted towards actions relating to debt (35.3 % in 2005) such as forgiveness, swaps, buy-backs, rescheduling and refinancing, and towards social infrastructure

**Financing for development, in particular ODA, increased sharply in 2005, but growth in ODA stalled in 2006**



projects (26 %). These two categories grew by respectively 43 % and 7.8 % on average per year between 2000 and 2005.

In 2005, the low income countries, which have the priority in EU development policy, received more than 60 % of allocated aid, having grown from 57.2 % in 2000. ODA has consistently exceeded private capital flows in low income countries, while FDI has generally been higher than ODA in middle income countries since 1996. FDI to low income countries decreased slightly from 9.9 % to 9.5 % of total allocated bilateral FDI from 2000 to 2005.

Following a decrease between 2000 and 2002, due to a low in private flows, total financing for development picked up again, reaching a historical high of EUR 119 billion in 2005 with private flows representing 56.3 % and ODA 37.7 %.

### Box 9.1: Objectives related to global poverty and sustainable development challenges in the renewed sustainable development strategy

Overall objective: To promote sustainable development actively worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments.

Operational objectives and targets

- Make significant progress towards meeting the commitments of the EU with regard to internationally agreed goals and targets, in particular those contained in the millennium declaration and those deriving from The World Summit on sustainable development held in Johannesburg in 2002 and related processes such as the Monterey consensus on financing for development, the Doha Development Agenda and the Paris Declaration on aid harmonisation;
- Contribute to improving international environmental governance (IEG), in particular in the context of the follow-up to the 2005 World Summit outcome, and to

strengthening multilateral environmental agreements (MEAs);

- Raise the volume of aid to 0.7 % of gross national income (GNI) by 2015 with an intermediate target of 0.56 % in 2010 (see more detailed targets under official development assistance);
- Promote sustainable development in the context of the WTO negotiations, in accordance with the preamble to the Marrakesh Agreement establishing the World Trade Organization 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.

#### The increase in imports from developing countries is accelerating

The EU-27 total imports from Development Assistance Committee (DAC) countries increased by 9.3 % per year on average during the period 2000-2006, still representing the largest export market for developing countries. China is the main trading partner, with 32.0 % of the total of imports from DAC countries in 2006, and 15.3 % of all EU-27 imports. Imports from the least developed countries (which are given priority in EU trade policy) represented 1.3 % of all EU-27 imports in 2006, the same level as in 2000, although they increased in absolute terms by 4.9 % on average since 2000. All groups of products saw an increase, the main growth being in the manufactured product group, with an increase of 10.5 % per year on average between 2000 and 2006.

#### Although narrowing, there is still a large gap of resource use between the EU and developing countries

The level of CO<sub>2</sub> emissions per capita illustrates the dramatic inequality of resource use between EU and developing countries. In 2005, CO<sub>2</sub> emissions per capita in DAC countries were still 3.9 times lower than the EU-27 level, compared to 4.7 times lower in 2000. Although emissions per capita decreased in EU-27 by 0.9 % per year on average between 1990 and 2000, they have grown at 0.3 % per year since then.

ODA for water supply and sanitation grew by 4.1 % per year on average between 2000 and 2005, and represented 2.8 % of total bilateral ODA in 2005).



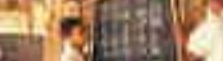
## Rationale for the selection of indicators

The indicators selected in this theme mainly monitor the objectives related to the key challenge 'global poverty and sustainable development challenges' of the renewed sustainable development strategy (Box 9.1). These are closely related to commitments made at world level, in particular at the UN Millennium Summit in 2000 (the millennium development goals, Box 9.2), and at the World Summit on sustainable development in Johannesburg in 2002.

The headline indicator, official development assistance (ODA), besides describing the fulfilment of the ODA commitments of the EU countries, provides an indication of the level of financial resources which can potentially be used for the attainment of sustainable development in less favoured countries. Although the delivery of ODA and private investments is not a synonym for sustainable development, they both contribute to it and can be considered as a necessary condition for sustainable development.

The remaining indicators are arranged in three subthemes.

- **Financing for sustainable development:** 'ODA and FDI by income group', 'total EU financing for development' and 'untied ODA' illustrate in more detail the financial contribution of Europe to the development of DAC countries. 'bilateral ODA by category' provide more contextual information on what financing is used for, with a particular focus on actions related to debt, and on social services; Other contextual indicators include 'ODA per capita', which describes EU aid from the perspective of recipient countries, and 'population living on less than USD 1 a day' (not presented here), providing information on the scale of global poverty.
- **Globalisation of trade:** EU trade policy aims to contribute to a more equitable integration of developing countries into the international trading system. The selected indicators provide an indication of the market share taken by developing countries as trading partners with the EU, in particular for least developed countries. If a better access to EU markets is necessary for the development of partner countries, it does not guarantee that social and environmental considerations have been taken on board. An indicator on the trade of fair-trade labelled products should complement this subtheme, but existing data are not sufficiently comparable and representative of all fair-trade movements. In future, an indicator on 'aggregated measurement of support' should also be included to monitor the EU commitments to reduce trade distortions for agriculture.
- **Global resource management:** the level of CO<sub>2</sub> emissions per capita illustrates the inequality of resource use between EU and developing countries. The aim is to replace it by an indicator on the contribution of the clean development mechanism to greenhouse gas emissions reductions in developing countries, when data are available. 'bilateral ODA dedicated to water supply and sanitation' provides information on the amount of aid going towards improving access to adequate water resources, in the context of the EU water initiative.



### Box 9.2: The millennium development goals for the year 2015

- Goal 1: eradicate extreme poverty and hunger
  - Target 1: halve, between 1990 and 2015, the proportion of people whose income is less than USD 1 a day
  - Target 2: halve, between 1990 and 2015, the proportion of people who suffer from hunger
- Goal 2: achieve universal primary education
  - Target 3: ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
- Goal 3: promote gender equality and empower women
  - Target 4: eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015
- Goal 4: reduce child mortality
  - Target 5: reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
- Goal 5: improve maternal health
  - Target 6: reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio
- Goal 6: combat HIV/AIDS, malaria and other diseases
  - Target 7: have halted by 2015 and begun to reverse the spread of HIV/AIDS
  - Target 8: have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
- Goal 7: ensure environmental sustainability
  - Target 9: integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
  - Target 10: halve, by 2015, the proportion of people without sustainable access to safe drinking water and the proportion of people without access to basic sanitation
- Target 11: by 2020, to have achieved a significant improvement in the lives of at least 100 million. slum dwellers
- Goal 8: develop a global partnership for development (see bilateral ODA indicator)
  - Target 12: develop further an open, rule-based, predictable, non-discriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction — both nationally and internationally)
  - Target 13: address the special needs of the least developed countries (includes: tariff and quota free access for least developed countries' exports; enhanced programme of debt relief for HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction)
  - Target 14: address the special needs of landlocked countries and small island developing States (through the programme of action for the sustainable development of small island developing States and the outcome of the 22nd special session of the General Assembly)
  - Target 15: deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term
  - Target 16: in cooperation with developing countries, develop and implement strategies for decent and productive work for youth
  - Target 17: in cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries
  - Target 18: in cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

## Potential linkages

### Linkages within global partnership

Effective and coherent aid policies and sustainable trade are complementary ways of promoting sustainable development worldwide. A lack of coherence in aid, and uncontrolled globalisation of trade could have a potential detrimental impact on global resources. For example, depending on the management of woodlands and agricultural land, an increased import of agricultural products could have a positive or negative impact on these resources and on biodiversity in the exporting countries. If adequately targeted however, financing and trade should contribute to sustainable global resource management.

### Linkages with the socioeconomic dimension

A strong positive link between European funding for development and economic growth in the EU is expected, since it is more difficult to set aside resources for assistance or investment when growth is weak. Private investments can have the additional benefit of leading to an infusion of innovative technologies and new management practices, for example through an increase in corporate social responsibility.

An increase in imports indicates progress in the further economic integration of third countries but also in the degree of EU dependence on third countries' resources.

EU contributions to strengthen the social dimension of globalisation and to promote productive employment and decent work respond to various international commitments and can have a global impact. It is reflected for instance in the objective to integrate decent work into national and regional strategies to promote development and reduce poverty.

**Linkages with the social dimension**

Financing for development contributes to tackle global issues that have a more or less direct impact at EU level. For example if financing contributes to better infrastructure and socio-economic conditions, this may contribute to the better management of migration from developing countries.

As described above, aid can have ambiguous effects on the environment and resources in developing countries, depending on how it is targeted. Similarly, trade can have negative impacts on developing countries resources, unless environmental considerations are taken into account, for example through labelling. Contributions to multilateral environmental agreements for global environmental assets such as biodiversity have benefits both in developing countries and at the EU level.

**Linkages with the environment dimension**

EU contributions to climate change have a global impact. This is directly reflected for example in the clean development mechanism, whereby the EU invests in activities to reduce greenhouse gas emissions in developing countries, with benefits both at home and in the rest of the world.

**Linkages with climate change, energy and transport**

An increase in imports is likely to have an impact on CO<sub>2</sub> emissions in both the EU and the developing countries, through the embodied emissions of imported products, exported to third countries.

If financing for development contributes to investment in cleaner technologies, it may influence greenhouse gas emissions from developing countries, with consequences for global climate change.

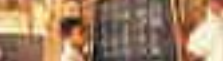
There is a link with energy security, and dependency of the transport sector on imported energy is likely to have a direct impact on the energy consumption by transport.

Production and consumption patterns are strongly linked to imports, both through corporate social responsibility concerns, and consumer demand. A higher EU consumption, and the need to increase EU resource productivity, could result in shifting resource intensive industries abroad and increasing import of their products. On the other hand, an increase in imports of fair-trade, organic, and environmentally friendly products is likely to affect productivity, employment creation and social cohesion and the preservation of natural resources in developing countries through certification schemes which include social and environmental standards.

**Linkages with sustainable consumption and production**

Global partnership also has multiple links with good governance, and policy coherence is a major objective of EU development policy. Trade policy, and more generally development policy, can have wide-ranging consequences for security, the social dimension of globalisation, global consumption and production patterns, and multilateral social and/or environmental agreements. Policy coherence, and more specifically subsidies, could affect the level of imports.

**Linkages with good governance**



### Further reading on global partnership in Europe

The European consensus on development, joint statement by the Council and the representatives of the Governments of the Member States meeting with the Council, the European Parliament and the Commission on European Union development policy. OJ C 41, 24.2.2006, pp.1-19

Global Europe: competing in the world, a contribution to the EU's growth and jobs strategy, COM(2006) 567

Promoting decent work for all — the EU contribution to the implementation of the decent work agenda in the world, COM(2006) 249

Investing in people — communication on the thematic programme for human and social development and the financial perspectives for 2007-13, COM(2006) 18

External action: thematic programme for environment and sustainable development of natural resources including energy, COM(2006) 20

Policy coherence for development: accelerating progress towards attaining the millennium development goals, COM(2005)134

Development cooperation 2006 report, efforts and policies of the members of the Development Assistance Committee, *OECD Journal on Development* 8(1), OECD, 2006

*External and intra-European Union trade — Statistical yearbook — Data 1958-2005.* Luxembourg, Office for Official Publications of the European Communities, 2006

## Official development assistance



**Definition:** The indicator is defined as **net disbursements for official development assistance (ODA) to Development Assistance Committee (DAC) countries as a percentage of gross national income (GNI) at market prices.**

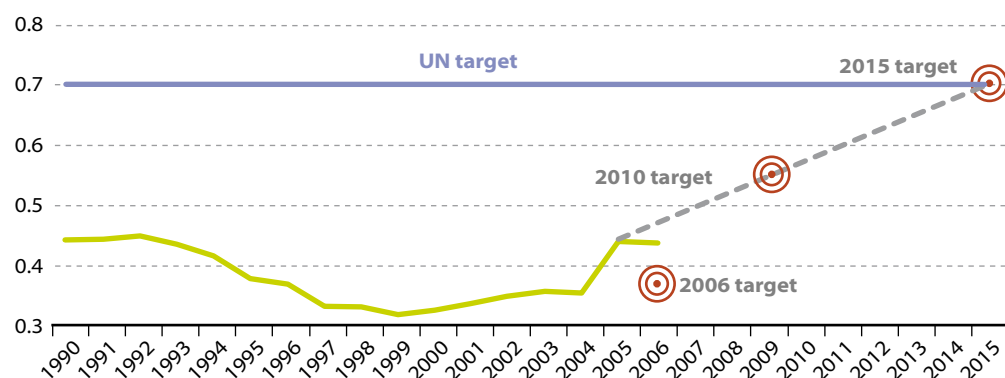
ODA consists of grants or loans, bilateral or multilateral, undertaken by the official sector with promotion of economic development and welfare in the recipient countries as the main objective. DAC countries refer to 'developing countries and territories' of the OECD DAC list of aid recipients. GNI at market prices equals GDP minus primary income payable by resident units to the rest of the world, plus primary income receivable by resident units from the rest of the world.

The EU provides half of the world's aid. The renewed sustainable development strategy includes as one of its overall objectives to promote sustainable development actively worldwide, and to ensure that the European Union's policies are consistent with global sustainable development and its international commitments. To this end, the volume of aid should raise to 0.7 % of GNI by 2015 with an intermediate target of 0.56 % in 2010: The strategy also recalls the European Council conclusions of June 2005 <sup>(215)</sup>:

- Member States which have not yet reached a level of 0.51 % ODA/GNI undertake to reach, within their respective budget allocation processes, that level by 2010, while those that are already above that level undertake to sustain their efforts;
- Member States which joined the EU after 2002 and that have not reached a level of 0,17 % ODA/GNI will strive to increase their ODA to reach, within their respective budget allocation processes, that level by 2010, while those that are already above that level undertake to sustain their efforts;
- Member States undertake to achieve the 0.7 % ODA/GNI target by 2015 whilst those which have achieved that target commit themselves to remain above that target; Member States which joined the EU after 2002 will strive to increase by 2015 their ODA/GNI to 0.33 %.

These new objectives follow on from an earlier collective commitment in 2002 to reach an EU average of 0.39 % GNI by 2006, coupled with individual Member States commitments to increase their ODA volumes to at least 0.33 % of GNI by 2006 <sup>(216)</sup>.

The strategy does not only include objectives in terms of quantity of aid, but also calls for efforts to 'increase the effectiveness, coherence and quality of EU and Member States aid policies in the period 2005-2010'.



### Indicator relevance

<sup>(215)</sup> Presidency conclusions of the Brussels European Council, 16 and 17 June 2005.

<sup>(216)</sup> Presidency conclusions of the Barcelona European Council, 15 and 16 March 2002.

**Figure 9.1:** EU-15 official development assistance (% of gross national income)

Source: OECD.

## Analysis

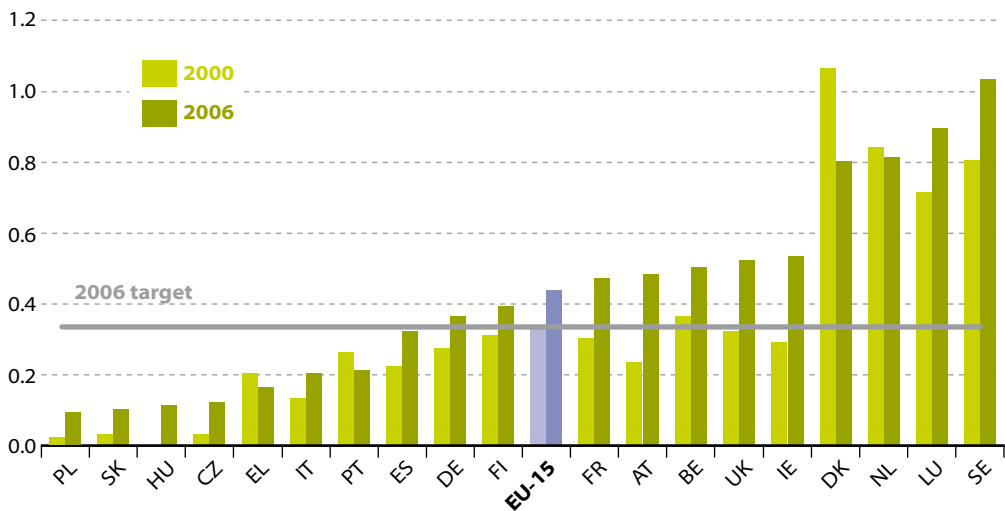
During the period 2000-2005, the EU-15 ODA increased from 0.32 % to 0.44 % of GNI, although it stagnated in 2006. Overall this corresponded to an average annual growth of more than 15 % of disbursed amounts in absolute value. This positive trend should be contrasted with a decrease from 0.44 % to 0.32 % between 1990 and 2000.

Despite the lack of increase in the latest year, the EU exceeded its 2006 collective objective of 0.39 % of GNI. In 2006, the share varied amongst the EU Member States from 0.16 % for Greece to 1.03 % for Sweden. Eleven countries have achieved the individual national targets of at least 0.33 % of GNI by 2006, while Greece, Portugal, Spain and Italy have remained significantly below this target. Four countries (Sweden, Luxembourg, the Netherlands and Denmark) achieved the UN target of 0.7 % of GNI in 2006.

**Figure 9.2: Official development assistance, 2000 versus 2006**  
(% of gross national income)

NB: Data for Hungary refer to 2005. Data are not available for Bulgaria, Estonia, Cyprus, Malta, Latvia, Lithuania, Romania and Slovenia.

Source: OECD.



From 2000 to 2006, the highest increase in terms of proportion of GNI amongst the DAC EU Member States took place in Austria, and Sweden, with increases of 0.29 and 0.23 percentage points respectively. Aid compared to GNI fell most notably in Denmark (0.26 percentage points), but also in Portugal, Greece and the Netherlands over the same period.

Aid has also increased since 2000 in non-DAC reporting OECD donor countries, with contributions in 2006 ranging from 0.09 % of GNI in Poland to 0.12 % in the Czech Republic.

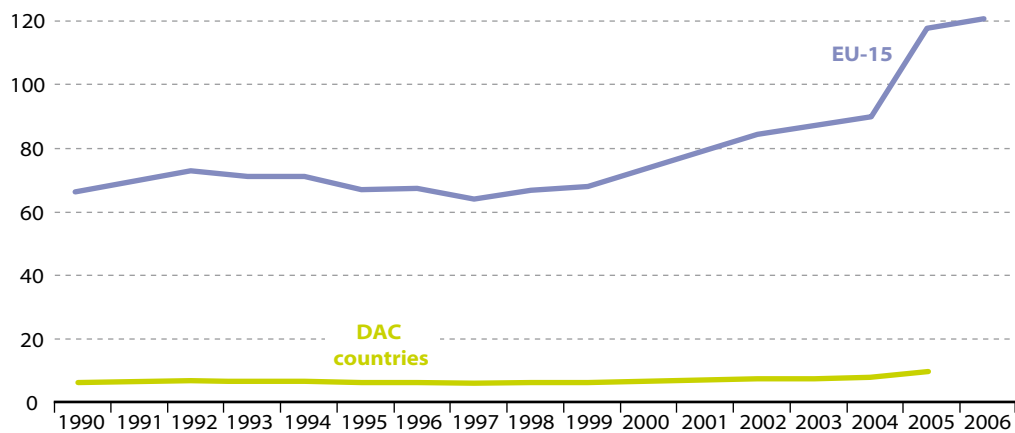
## ODA per capita



**Definition:** The indicator, both in EU donor and in recipient countries, is defined as **EU-15 net disbursements for ODA** at market prices to the countries of the DAC list of recipients. It is presented both **per EU-15 inhabitant and per recipient country inhabitant**.

To combat global poverty, the European Union is committed to achieving the UN goal of 0.7 % ODA per GNI. ODA per capita is a contextual indicator: comparing the contribution of ODA per EU-15 citizen to the corresponding amount of money received by each inhabitant of DAC countries provides a pragmatic illustration of the contribution of every European citizen to development aid.

### Indicator relevance



**Figure 9.3:**  
ODA per capita  
(EUR per capita)

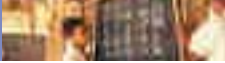
Source: OECD.

The average contribution to ODA reached a record high of EUR 120.1 per European citizen in 2006, compared with EUR 72.8 in 2000, representing an average annual growth rate of 8.7 % during this period much higher than inflation.

### Analysis

In recipient countries, this translated into amounts of EUR 8.7 per inhabitant in 2005, compared to EUR 5.7 in 2000, corresponding to an average annual growth rate of 8.6 %.

As an important share of total ODA (more than 17 % in 2005) cannot be allocated to a precise recipient country or group of countries, the breakdown of ODA per capita is not calculated by income group. An indication about this ventilation is however given with the breakdown of total ODA per group of countries and its comparison with the share of each region in the total population (see indicator on 'ODA by income group').



## Financing for sustainable development

## Bilateral ODA

**Definition:** The indicator is defined as total **official development assistance (ODA) commitments made either by bilateral aid or by regional banks**. It is calculated at market prices and covers aid from EU countries to the countries mentioned in the DAC (Development Assistance Committee) list.

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They also include transactions with national and international non-government organisations (NGOs) active in development and other internal development-related transactions such as interest subsidies, spending on promotion of development awareness, debt reorganisation and administrative costs.



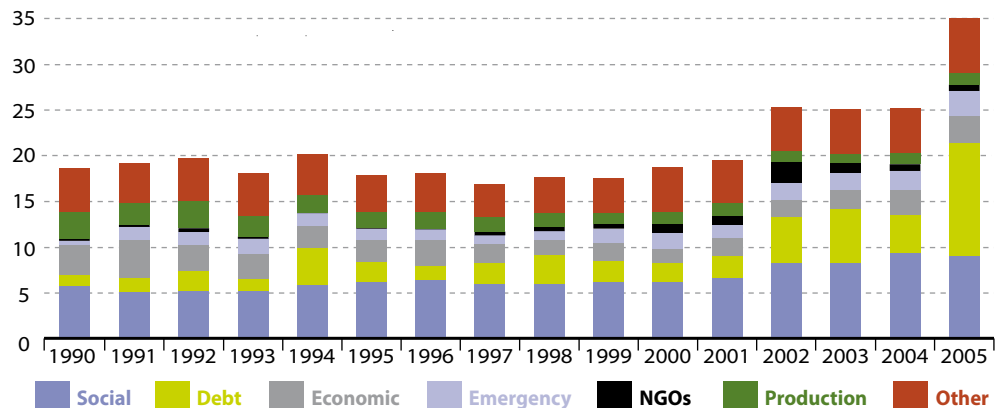
## Indicator relevance

<sup>(217)</sup> The European consensus on development. 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 indicator describes the fulfilment of ODA commitments by EU countries and provides information on the allocation of ODA in different aid categories with different opportunities to strive for poverty alleviation and welfare development. It is important to track movements of aid by sector of destination to assess whether aid is allocated to the most needed sectors, in conformity with the millennium development goals (MDGs) set for the year 2015 and with EU political commitments. Policy coherence for aid is one of the objectives of the renewed sustainable development strategy. In the EU development policy <sup>(217)</sup>, debt reduction is seen as a way to provide predictable financing, and the renewed sustainable development strategy recognises it as one of the ways to increase quality and effectiveness of aid. The social dimension of globalisation is recognised as important in EU development policy.

**Figure 9.4:**  
EU-15 bilateral (and regional banks) ODA by category (billion EUR)

Source: OECD.

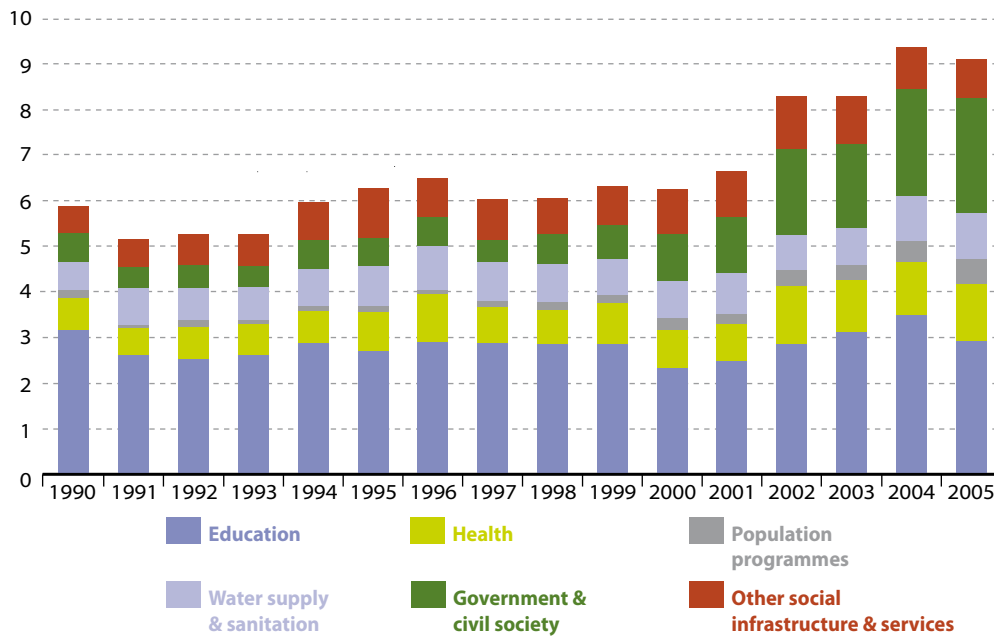


## Analysis

Total bilateral commitments (including commitments from regional banks) reached a high of EUR 35 billion in 2005, with an average annual increase of 13.2 % since 2000. This contrasts with a relative stagnation between 1990 and 2000, with an annual average growth rate of 0.1 %.

The two main categories for bilateral aid in 2005 were actions relating to debt (MDG 8, target 15), with 35.3 % of the total, and commitments for social infrastructure and services, representing 26 %. The recent trend in total bilateral ODA was mainly driven by the increase in debt relief, which grew by 43 % on average per year, a positive development since the renewed sustainable development strategy recognises debt reduction as a way to increase quality and effectiveness of aid.

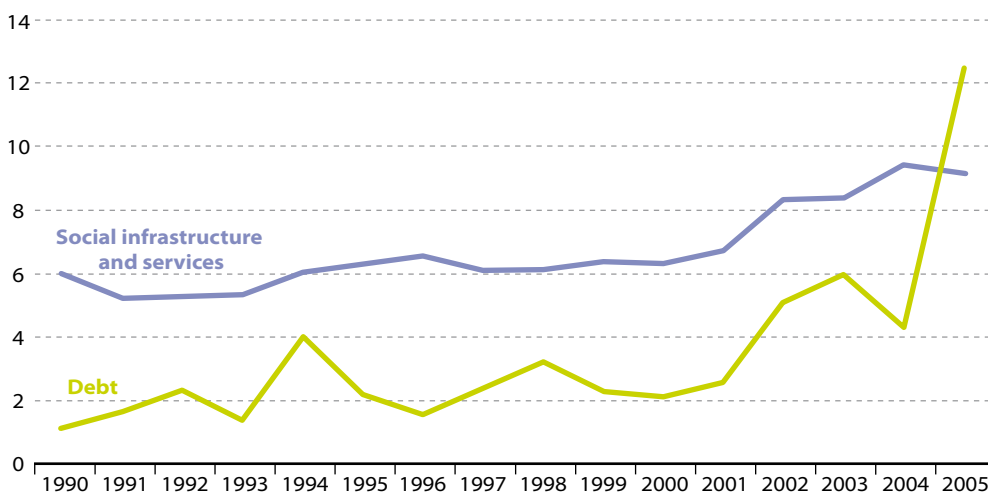




**Figure 9.5:** Structure of EU-15 bilateral ODA dedicated to social infrastructure and services (billion EUR)

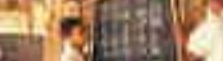
Source: OECD.

For social infrastructure and services, the average annual growth rate between 2000 and 2005 was 7.8 %, with the highest increase for government and civil society (annual increase of 19.6 %) and population programmes (16.2 %). Actions related to education (MDG 2, target 3) grew by 4.6 % on average per year during the same period, while the annual average growth rate for water supply and sanitation (MDG 7, target 10) was 4.1 %. The two latter categories represented respectively 8.4 and 2.8 % of total bilateral ODA in 2005. Support to NGOs decreased on average by 8.3 % per year, and represented 1.9 % of total bilateral ODA in 2005.



**Figure 9.6:** Bilateral ODA dedicated to debt and to social infrastructure and services (billion EUR)

Source: OECD.



## Financing for sustainable development

## ODA and FDI by income group

**Definition:** Official development assistance (ODA) is defined here as **net bilateral and imputed multilateral disbursements** at market prices for ODA to countries mentioned in the DAC (Development Assistance Committee) list. See the methodological notes for a description of the groups of countries.

Foreign direct investment (FDI) includes significant **investments by foreign companies of production facilities or ownership stakes taken in the national companies.**

Imputations are made by the OECD on the basis of annual reports received from these international institutions, but it is not possible to allocate the total amount of multilateral or bilateral ODA, or of FDI, to a specific country or group of countries. In 2005 for instance, a total of EUR 7.5 billion (17.2 %) of total net ODA, and EUR 20 billion (48 %) of FDI could not be allocated to specific countries. The figures presented in the analysis do not take into account unallocated ODA or FDI.



## Indicator relevance

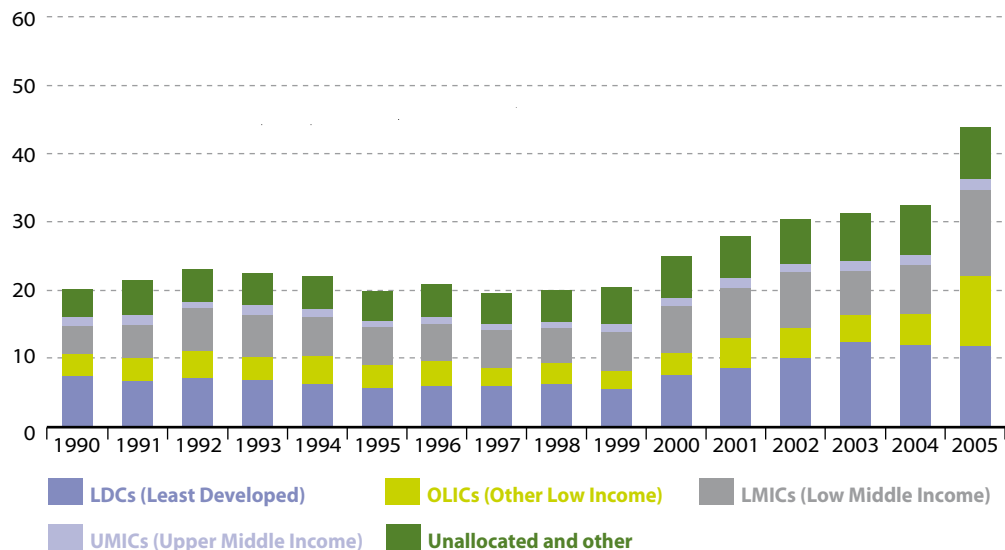
<sup>(218)</sup> The European consensus on development. Joint statement by the Council and the representatives of the Governments of the Member States meeting within the Council, the European Parliament and the Commission on European Union development policy.

The indicator gives an indication of the breakdown of aid by country of destination to check whether aid is allocated to the countries where assistance is the most urgent. While EU development aid aims to contribute to the eradication of poverty in all developing countries, including both low-income and middle-income countries, priority is given to the least developed and the other low-income countries <sup>(218)</sup>.

The Monterey consensus identified private international capital flows, including foreign direct investment, as 'vital complements to national and international development efforts' and emphasised the need 'to create the necessary domestic and international conditions to facilitate direct investment flows'. FDI can be seen as an indicator of the trend towards globalisation as companies invest all over the world to access markets, technology and talents.

**Figure 9.7:**  
Bilateral and imputed multilateral ODA by income group (billion EUR)

Source: OECD.



The first two recipients of the allocated EU ODA to developing countries in the early part of the decade were the least developed countries, which were the first group until 2004, and the low middle income countries, which became the first destination for ODA in 2005. However, the relatively stronger increase of aid to other low income countries, with an average annual growth rate of 26.3 % between 2000 and 2005 led to a more balanced picture in 2005, with 34.5 % of the allocated aid going to low middle income countries, 32.4 % to least developed countries, and 28.5 % to other low income countries. These amounts should be contrasted with the countries respective populations: the low middle income countries and least developed countries receive approximately the same proportion of aid, while they represent respectively 46.4 % and 14 % of the total DAC countries population. Together, the low income countries (the least developed countries and the other low income countries), who have the priority in EU development policy, received more than 60 % of allocated aid in 2005, having grown from 57.2 % in 2000.

## Analysis

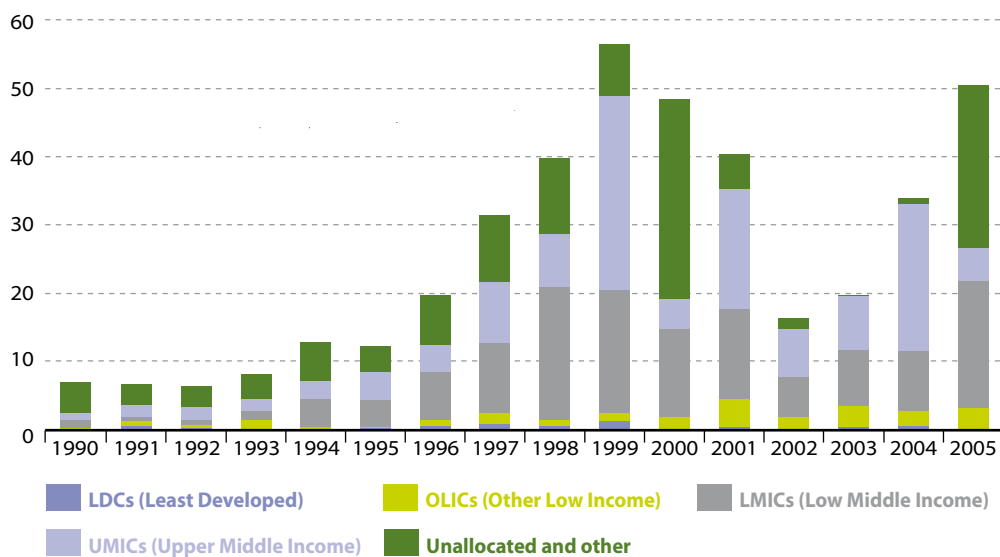
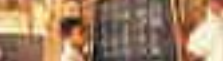


Figure 9.8: FDI by income group (billion EUR)

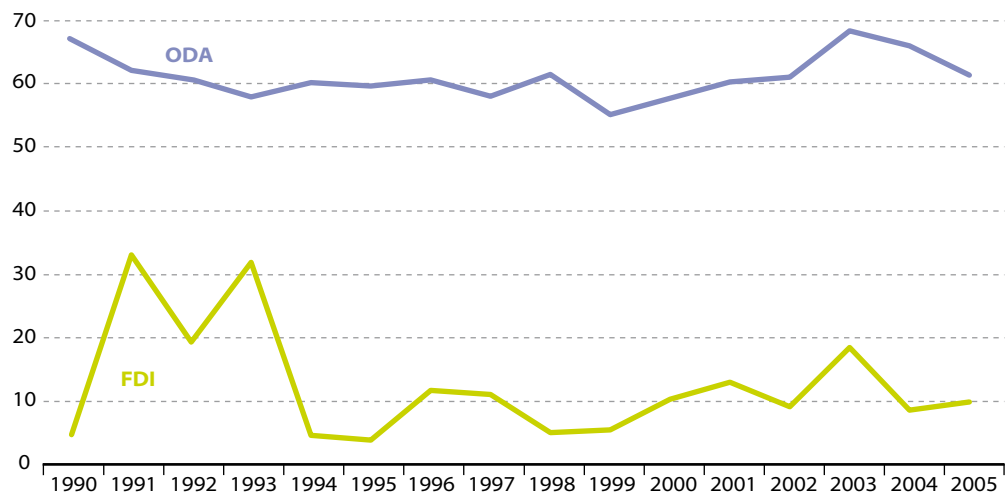
Source: OECD.

Following a steady increasing trend from 1990 (EUR 2.4 billion) to 1999 (EUR 49 billion), representing an average annual increase of 46 %, FDI has shown irregular progress during the period 2000-2005, resulting in an average annual growth rate of 0.6 %. The allocation of FDI shows a clear predominance of investment in middle income countries, with a higher proportion in low or high middle income countries depending on the years. In 2005, 72.1 % of the allocated FDI went to low middle income countries, 18.4 % to upper middle income countries. FDI to low income countries (least developed countries and other low income countries) decreased slightly from 9.9 % to 9.5 % of total allocated bilateral FDI from 2000 to 2005.



**Figure 9.9: Share of ODA and FDI allocated to low income countries**  
(% of allocated ODA and FDI)

Source: OECD.



ODA has consistently exceeded private capital flows in low income countries, while FDI has generally been higher than ODA in middle income countries after 1996. ODA has been the least volatile component of capital flows to developing countries.

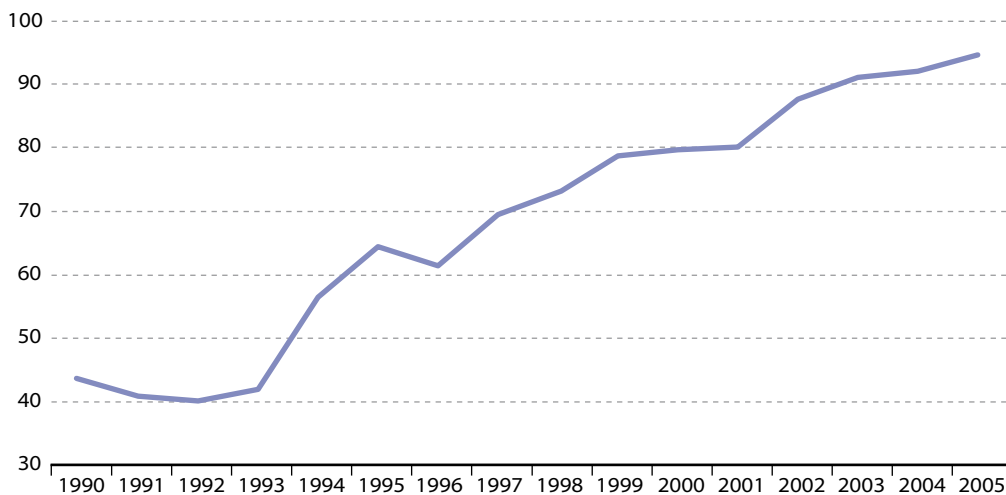
## Untied ODA



**Definition:** Official development assistance (ODA) consists of grants or loans that are undertaken by the official sector with promotion of economic development and welfare in the recipient countries as the main objective. This indicator is defined as the **share of ODA for which the associated goods and services may be fully and freely procured in substantially all countries**. DAC (Development Assistance Committee) countries refer to developing countries and territories on Part I of the OECD DAC list of aid recipients for which there is a long-standing United Nations target of 0.7 % of donors' gross national product. The shares of untied ODA are calculated based on total bilateral ODA figures that vary from those presented in the table on bilateral ODA by category. The reason for these deviations is the exclusion of technical cooperation and administration costs (that are tied by definition) from the figures used for the above ratios.

One of the operational objectives and targets of the renewed sustainable development strategy under the key challenge 'global poverty and sustainable development challenges' is to 'increase the effectiveness, coherence and quality of EU and Member States aid policies in the period 2005-2010'. The strategy also specifies that one of the ways to increase the quality and effectiveness of aid would be to increase untying of aid.

### Indicator relevance

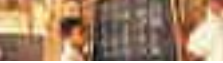


**Figure 9.10:** EU-15 share of untied ODA in total bilateral commitments (%)

Source: OECD.

The share of untied ODA in total bilateral commitments increased from 43.5 % to 79.5 % between 1990 and 2000, representing an increase of about 3.6 percentage points per year during this period. Since 2000, it increased further to 94.4 % (corresponding to an increase of 3 percentage points per year), a positive trend in the light of the overall objective to increase the untying of ODA. Two Member States, the United Kingdom and Ireland, had a share of 100 % of untied ODA in 2005 (see additional data on the SDI website).

### Analysis



## Financing for sustainable development

## Financing for development

**Definition:** The indicator is defined as **EU total financing for development to DAC** (Development Assistance Committee) **countries** at market prices and refers to net disbursements of official development assistance (ODA), other official flows (OOF) and private flows (mainly foreign direct investment, or FDI).

Private flows include private export credits, direct investment and financing to multilateral institutions. OOF are transactions which do not meet the conditions for eligibility as ODA (or official aid), either because they are not primarily aimed at development, or because they have a grant element of less than 25 %.



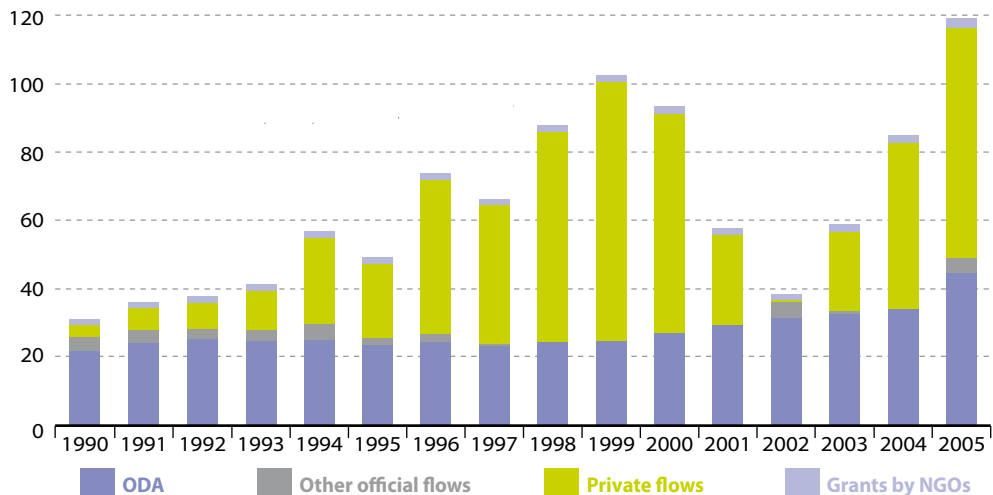
## Indicator relevance

The indicator is a measure of the volume of various kinds of financial inflows to developing countries and presents the most important contributions of different actors (private enterprises, governments and civil society stakeholders) to activities in developing countries. It encompasses the key aspects of the Monterrey consensus, ODA and FDI being the key contributors to development.

ODA refers to projects undertaken by the official sector to eradicate poverty in the recipient countries.

**Figure 9.11: Total EU-15 financing for development, by type (billion EUR)**

Source: OECD.



## Analysis

The trends in the various private and official flows can vary considerably from year to year. Total financing for development fell drastically over 2000-2002, after a peak at EUR 102.4 billion in 1999, to EUR 38.7 billion in 2002 and increased again in 2005, reaching the record value of EUR 118.9 billion. This represents an annual average increase of 5.1 % from 2000 to 2005, compared to 11.5 % per year on average between 1990 and 2000.

The main component of financing over 1996-2000 was private flows, which shrunk to around one 10th of the 2000 level in 2002, to increase again until recovering to slightly above the 2000 level in 2005, at EUR 66.9 billion. This resulted in an annual average growth of 1 % between 2000 and 2005, while ODA grew at a more regular pace, by 10 % per year on average, to reach EUR 44.8 billion in 2005, versus EUR 27.4 in 2000.

## EU imports from developing countries



**Definition:** The indicator is defined as the **value at market prices of EU imports from DAC countries**, successively broken down by groups of countries and by groups of products. The countries from the DAC list of aid recipients are classified by income groups referring to the World Bank definition (see methodological notes for more details).

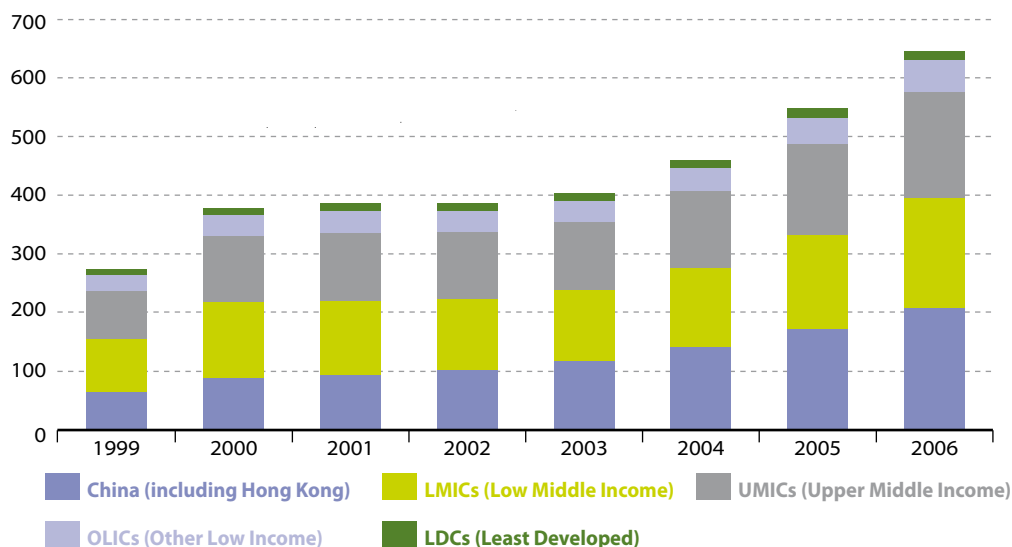
Agricultural products, crude materials, energy products and manufactured goods are defined as the products covered by, respectively, sections 0 and 1, sections 2 and 4, section 3, and sections 5 to 8 of the standard international trade classification (SITC) revision 3.

The importance of trade as a factor for development and growth is becoming more and more evident. If accompanied by the proper flanking policies and if used correctly, trade policies can provide opportunities for promoting economic development and tackling poverty reduction. Development is a fundamental tenet of the EU trade strategy which aims to support the gradual integration of developing countries in the world economy and the multilateral trading system. Amongst developed countries, the EU is the most important market for developing countries in general, and for least developed countries in particular.

One of the objectives of the renewed sustainable development strategy is to promote sustainable development in the context of the World Trade Organization negotiations. The 'European consensus on Development' <sup>(219)</sup> states that in the completion of the Doha Development Round, particular attention will be paid to the least advanced and most vulnerable countries. The EU imports indicate both the access as well as capacities of developing countries to reach EU markets and to benefit from global trade in their national economies, but this does not guarantee for the use of environmentally and socially sustainable modes of production. EU imports of materials are likely to go hand in hand with additional pressures on resources in developing countries.

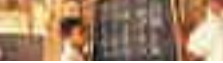
### Indicator relevance

<sup>(219)</sup> The European consensus on development. 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.



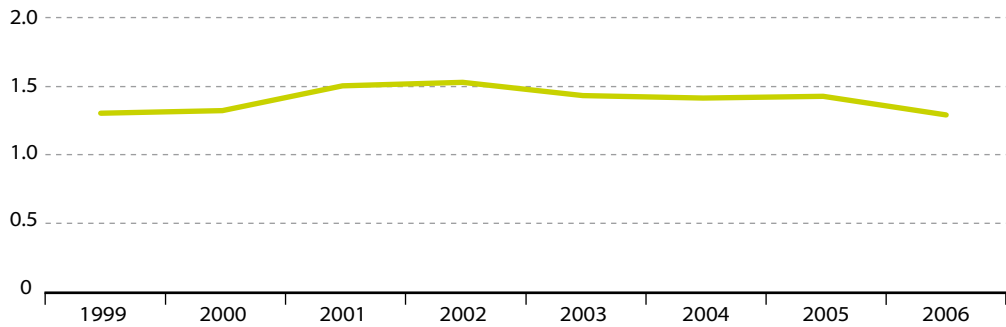
**Figure 9.12:** EU-27 imports from developing countries by income group (billion EUR)

Source: Eurostat.



**Figure 9.13:** Share of imports from least developed countries in total EU-27 imports (%)

Source: Eurostat.



### Analysis

In 2006, the EU-27 imports from the DAC countries amounted to EUR 646 billion, representing 47.9 % of all EU-27 imports. From 2000 to 2006, total imports from DAC countries increased on average by 9.3 % per year, mainly driven by imports from China, with an average growth annual rate of 15.4 %. China is strongly established as the most important partner for EU imports, with 32.0 % of the total of imports from DAC countries, and 15.3 % of all EU-27 imports in 2006. Low middle income countries (excluding China) and upper middle income countries represent respectively 13.9 % and 13.3 % of the total EU import market. The share of imports from the least developed countries in total EU-27 imports was of 1.3 % in 2006, at the same level as in 2000, although it increased in absolute terms by 4.9 % on average since 2000.

**Figure 9.14:** EU-27 imports from developing countries by group of products (billion EUR)

Source: Eurostat.



All groups of imported products saw an increase during the period 2000-2006 of which the manufactured product group was the most important. Following an increase of 10.5 % per year on average from 2000, it represented 62.4 % of the total imported products in 2006, with China representing the highest share (49.6 %) of the DAC countries.

Imports of energy products increased during the same period by 10.4 % per year on average, representing 22.0 % of imported products in 2006. EU imports of raw materials and agricultural products also increased by 7.1 and 4.6 % per year on average, representing 6.0 % and 7.4 % of the total imports respectively in 2006. In the same year, agricultural products from developing countries represented 70.6 % of total EU agricultural imports.



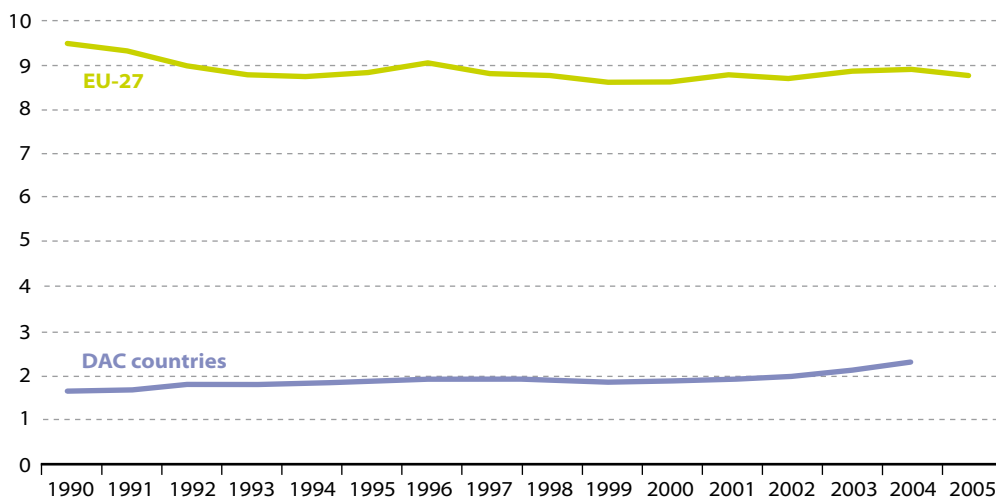
## CO<sub>2</sub> emissions in EU and developing countries



**Definition:** The indicator compares the **levels of carbon dioxide (CO<sub>2</sub>) emissions per inhabitant in the EU with levels in developing countries**, in tonnes per capita. Developing countries are here identified as the ‘developing countries and territories’ of the OECD Development Assistance Committee list of aid recipients.

One of the objectives of the renewed sustainable development strategy is to ‘contribute to improving international environmental governance ... and to strengthening multilateral environmental agreements’. The ‘European consensus on development’<sup>(220)</sup> also includes this objective, and specifies that ‘with regard to climate change, the Community will focus its efforts on the implementation of the EU action plan on climate change in the context of development cooperation’. Over time, the EU has implemented a range of environmental measures aimed to improve and protect the global environment. The CO<sub>2</sub> emissions per capita indicator is one of the indicators used for monitoring the EU achievements on millennium development goal 7 (ensure environmental sustainability of the EU).

Few of the DAC list countries have signed the Kyoto Protocol, but they are recognised as being especially vulnerable to the adverse impacts of climate change. The European consensus on development also states that ‘adaptation to the negative effects of climate change will be central in the Community’s support to least developed countries and small island development States’.



### Indicator relevance

<sup>(220)</sup> The European consensus on development. 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.

**Figure 9.15: CO<sub>2</sub> emissions per capita in the EU and in developing countries (tonnes per capita)**

*NB:* Data exclude emissions and removals due to land use, land-use change and forestry (LULUCF).

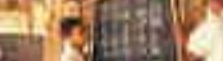
Source: European Environment Agency/Eurostat (EU-27); International Energy Agency (DAC).

Despite an increase in CO<sub>2</sub> emissions per capita in DAC countries, they remain 3.9 times lower than the EU-27 level, compared to 4.7 times more in 2000, and 6.0 times more in 1990.

Over the period 1990-2000, CO<sub>2</sub> emissions per capita at EU-27 level decreased by 0.9 % per year on average, from 9.4 tonnes per capita in 1990, to 8.5 in 2000. Since 2000, CO<sub>2</sub> emissions per capita have increased by 0.3 % per year, to 8.7 tonnes per capita in 2005.

In DAC countries on the other hand, CO<sub>2</sub> emissions went up by 1.4 % per year on average during the period 1990-2000, from 1.6 to 1.8 tonnes per capita, and the average growth rate was 5.4 % between 2000 and 2004, to reach 2.2 tonnes per capita in 2004.

### Analysis



## Global resource management

## Bilateral ODA dedicated to water supply and sanitation

**Definition:** The indicator is defined as the **amount of total official development assistance (ODA) commitments made either by bilateral aid or by regional banks dedicated to water supply and sanitation**. It is calculated at market prices and covers aid from EU countries to the countries mentioned in the DAC (Development Assistance Committee) list (see bilateral ODA).

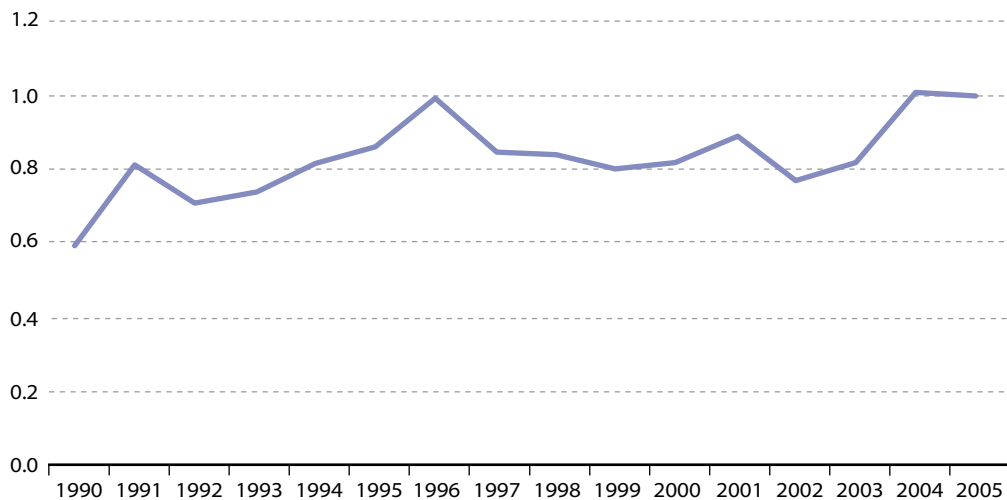


### Indicator relevance

The indicator provides more specific information on the allocation of ODA for water supply and sanitation in developing countries. The renewed sustainable development strategy underlines the need for implementation of the EU water initiative, launched at the 2002 World Summit for sustainable development in Johannesburg (WSSD), to contribute to the achievement of the millennium development goals (MDGs) and WSSD targets for drinking water and sanitation, within the context of an integrated approach to water resources management. In this context, the EU is committed to contribute to achieving the international goal of halving by 2015 the proportion of people who are unable to reach or afford safe drinking water and the proportion of people who do not have access to adequate sanitation. Reaching this objective would require an increase in funding for water supply and sanitation.

**Figure 9.16:**  
EU-15 bilateral  
ODA dedicated to  
water supply and  
sanitation (billion  
EUR)

Source: OECD.



### Analysis

Bilateral ODA dedicated to water supply and sanitation increased more strongly in absolute terms between 2000 and 2005, by 4.1 % per year on average, compared to 3.1 % between 1990 and 2000, a favourable evolution in the context of the EU water initiative objective. However since bilateral ODA was relatively stable in the first period, and increased strongly since 2000, this evolution results in a decrease in terms of the share in total bilateral ODA: actions related to water supply and sanitation represented 2.8 % of total bilateral ODA in 2005, compared to 4.3 % in 2000 and 3.2 % in 1990.



## Methodological notes

### Official development assistance and related indicators

The data come from the OECD DAC database. DAC statistics are collected annually from the Members of the OECD Development Assistance Committee (DAC), a key forum of major bilateral donors. These comprise 22 donor countries and the European Commission. Current DAC EU Members and their respective dates of Membership are as follows: Austria (1965), Belgium (1960), Denmark (1963), France (1960), Finland (1975), Germany (1960), Greece (1999), Ireland (1985), Italy (1960), Luxembourg (1992), The Netherlands (1960), Portugal (1960/91)<sup>(221)</sup>, Sweden (1965), Spain (1991), United Kingdom (1961), EC (1961).

There are also other donors that are not part of the DAC, both within and outside the OECD, which are playing an

increasing role in development cooperation. Non-DAC EU member donors include: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia (as included in the development cooperation report 2006)

The data cover aid loans and grants, other official flows, private market transactions and assistance from non-governmental organisations to each recipient country and recipient countries combined (see Box 9.3).

DAC statistics aim to meet the needs of policy makers in the field of development cooperation, and to provide a means of assessing the comparative performance of aid donors. Recording of transactions follows the *Handbook for reporting debt reorganisation on the DAC questionnaire*.

### Box 9.3: Grouping of countries in DAC list of ODA recipients

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 (Development Aid Committee of the OECD) 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. In the 'DAC list of ODA recipients, effective from 2006 for reporting on 2005, 2006 and 2007' countries are clustered by income groups as follows:

- least developed countries (LDCs): this includes 50 countries: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, East Timor, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Tanzania, Togo, Tuvalu, Uganda, Vanuatu, Yemen and Zambia;
- other low income countries (OLICs): other countries with per capita GNI inferior to USD 825 in 2004. This includes 19 countries: Cameroon, Congo, Côte d'Ivoire, Ghana, India, Kenya, North Korea, Kyrgyzstan, Moldova, Mongolia, Nica-

ragua, Nigeria, Pakistan, Papua New Guinea, Tajikistan, Uzbekistan, Vietnam and Zimbabwe;

- low middle income countries (LMICs): countries with per capita GNI comprised between USD 826 and USD 3 225 in 2004. This includes 48 countries: Albania, Algeria, Armenia, Azerbaijan, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, China, Colombia, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, former Yugoslav Republic of Macedonia, Georgia, Guatemala, Guyana, Honduras, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Marshall Islands, Micronesia, Morocco, Namibia, Niue, Palestinian Adm. Areas, Paraguay, Peru, Philippines, Serbia & Montenegro, Sri Lanka, Suriname, Swaziland, Syria, Thailand, Tokelau, Tonga, Tunisia, Turkmenistan, Ukraine, and Wallis & Futuna;
- upper middle income countries (UMICs): countries with per capita GNI comprised between USD 3 256 and USD 10 065 in 2004. This includes 36 countries: Anguilla, Antigua and Barbuda, Argentina, Barbados, Belize, Botswana, Chile, Cook Islands, Costa Rica, Croatia, Dominica, Gabon, Grenada, Lebanon, Libya, Malaysia, Mauritius, Mayotte, Mexico, Montserrat, Nauru, Oman, Palau, Panama, Saudi Arabia, Seychelles, South Africa, Saint Helena, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Turkey, Turks and Caicos Islands, Uruguay and Venezuela.

Low income countries refer to least developed countries and other low income countries.

<sup>(221)</sup> Portugal joined the DAC in 1960, withdrew in 1974 and rejoined in 1991.



The EU indicators are compiled as follows:

- official development assistance: sum of net ODA (both bilateral and multilateral) to the DAC list of countries disbursed by each Member State divided by the sum of GNI at market prices in each Member State,
- official development assistance by income group: sum of net bilateral and imputed multilateral ODA disbursed by each Member State,
- bilateral ODA by category: sum of disbursements made to bilateral aid or regional banks by EU-15 countries to the DAC list of countries in each Member State,
- total EU financing for development, by type: sum of net disbursements of ODA, OOF and private flows to DAC list of countries in each Member State,
- ODA per capita, in EU-15 donors or recipient countries: sum of net disbursements for ODA to the DAC list of countries in each EU-15 Member State divided by the sum of inhabitants of relevant countries.

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They also include transactions with national and international non-government organisations (NGOs) active in development and other internal development-related transactions such as interest subsidies, spending on promotion of development awareness, debt reorganisation and administrative costs.

Multilateral transactions refer to contributions by Member States to international institutions with governmental membership which conduct all or a significant part of their activities in favour of development and aid recipient countries. A contribution to such an agency is deemed to be multilateral if it is pooled with other contributions and disbursed at the discretion of the agency.

For the indicator foreign direct investment, direct investment is a category of international investment made by a resident entity in one economy (direct investor) with the objective of establishing a lasting interest in an enterprise resident in an economy other than that of the investor (direct investment enterprise). 'Lasting interest' implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management of the direct investment enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprises, both incorporated and unincorporated.

The categories of aid presented refer to the following:

- social infrastructure and services: this main category relates essentially to efforts to develop the human resource potential of aid recipients. It comprises education, health, population policies and programmes and reproductive health, water supply and sanitation, government and civil society, other social infrastructure and services;
- economic infrastructure and services: this major heading groups assistance for networks, utilities and services that facilitate economic activity. It includes: transport and storage, communications, energy generation and supply, banking and financial services, business and other services;

- action relating to debt: this main heading groups all actions relating to debt (forgiveness, swaps, buy-backs, rescheduling, refinancing);
- emergency assistance: this main heading groups emergency and distress relief in cash or in kind, emergency food aid, humanitarian aid including aid to refugees, and assistance for disaster preparedness;
- Support to NGOs: this main heading refers to official funds paid over to national and international non-governmental organisations for use at the latter's discretion. Official funds made available to NGOs for use on behalf of the official sector, in connection with purposes designated by the official sector, or known to and approved by the official sector, are not reportable as support to NGOs but as ODA through NGOs.

More information is available at: <http://www.oecd.org>.

### EU imports from developing countries

All data concerning the following indicators: EU imports from developing countries, by income group and by group of products and EU imports of materials from developing countries, by group of products come from Eurostat, Comext database.

The product classification Combined Nomenclature (CN) is applied for the detailed data whereas the standard international trade classification (SITC Rev. 3) or the broad economic categories (BEC) is used for aggregated data. The geonomenclature classifies countries for external trade purposes.

Data collection takes place via customs declarations applying a commonly agreed categorisation of products in global trade. Imports from a non-EU country include:

goods, which enter the statistical territory of the Member State from a non-EU country and are: (1) placed under the customs procedure for release into free circulation (goods that will be consumed in the importing Member State or dispatched to another Member State), either immediately or after a period in a customs warehouse, or (2) placed under the customs procedure for inward processing or processing under customs control (usually goods destined to be processed, transformed or repaired for subsequent re-export) either immediately or after a period in a customs warehouse.

### CO<sub>2</sub> emissions per capita in the EU and in developing countries

For EU Member States, the indicator is compiled using the data on CO<sub>2</sub> emissions (excluding land use change and forestry) provided in the official submission of the Commission to the UNFCCC. Per capita emissions are calculated using Eurostat population statistics.

For the DAC countries, CO<sub>2</sub> emissions from fuel combustion are calculated by the International Energy Agency (IEA) using IEA energy data and the default methods and emission factors from the *Revised 1996 IPCC Guidelines for national greenhouse gas inventories* (IPCC/OECD/IEA Paris, 1997). Per capita emissions are calculated using IEA population data. IEA data were extracted from the IEA statistical databases: energy balances of OECD countries, energy statistics of OECD



countries and energy technology research and development  
© OECD/IEA 2007.

The following DAC countries were included in the calculation: Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Cameroon, Chile, China, Colombia, Congo (Brazzaville), Costa Rica, Côte 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, 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, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe. Data were unavailable for the remaining countries.



# Good governance

# 10

**Strategy objective:**

*'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 Background

'Good governance' can be defined both as a process of better policy-making and a process by which better policy decisions are implemented. In the context of sustainable development, the Plan of implementation of the 2002 World Summit on sustainable development stated that 'good governance within each country and at the international level is essential for sustainable development'.

Already in 2000, the Commission identified 'the promotion of new forms of governance' as one of its four strategic objectives. In 2001, the sustainable development strategy made reference to the commitments made 'to reform and modernise structures and working methods' of the EU institutions. A few weeks later, the White Paper on governance (Box 10.1)<sup>(222)</sup> defined the principles of good governance as openness, participation, accountability, effectiveness and coherence.

<sup>(222)</sup> European governance: a White Paper, COM(2001) 428.

In 2006, the renewed EU sustainable development strategy (Box 10.2) integrated the good governance concept among its principles and objectives. This includes the promotion and protection of fundamental rights, the maintenance of an open and democratic society, the involvement of citizens, businesses and social partners in policy-making, and the promotion of policy coherence between all European Union policies and at all levels. The overall aim in the strategy is to achieve better policy-making based on better regulation and through integrating sustainable development concerns at all levels. To reach this goal, the strategy invites all EU institutions and Member States to use tools such as impact assessments in order to ensure that major policy decisions are based on robust proposals, assessing in a balanced way their social, environmental and economic impacts as well as the impact on the rest of the world. Furthermore, the renewed strategy emphasise the cost-effectiveness of market-based instruments to deliver its objectives. Accordingly the strategy encourages exploring further the win-win opportunities offered by a shift in taxation from labour to energy consumption and pollution.

Good governance is a new area for official statistics, which is reflected in the lack of robust and meaningful indicators on this topic. The 'good governance' theme currently mainly relies on data from administrative sources, and should be considered as an initial attempt to translate into quantitative indicators some of the issues raised in the White Paper and in the renewed strategy.

## Main changes

The trends observed in this theme since 2000 are rather mixed. The rate of transposition of Community law has improved, and the transposition target was exceeded, while the number of infringement cases brought to the European Court of Justice continues to increase in the EU-15, although less rapidly. True progress has been achieved in making more information available to the public through greater access to e-government, but the interest of citizens in political life is still not high as expressed by the lack of increase in the voter turnout. There has been no progress in shifting taxation from labour to resources and pollution.



**Table 10.1: Evaluation of changes in the good governance theme (from 2000)** <sup>(223)</sup>

	EU-27	EU-15
<b>Policy coherence and effectiveness</b>		
Infringement cases	:	☁️⚡️
Transposition of Community law	☀️	☀️
<b>Openness and public participation</b>		
Voter turnout in EU parliamentary elections	:	☀️☁️
Voter turnout in national parliamentary elections	☀️☁️	☀️☁️
E-government availability	:	☀️
E-government usage	:	:
<b>Economic instruments</b>		
Environmental and labour tax revenues	☀️☁️	☀️☁️



**LEGEND:**

- ☀️ favourable change/ on target path
  - ☀️☁️ no or insufficient change
  - ☁️⚡️ unfavourable change/far from target path
  - :
- insufficient data/EU aggregate not available

<sup>(223)</sup> 'Citizens' trust in EU institutions' was not evaluated as it is a contextual indicator. EU-15 progress in e-government availability was evaluated from 2002 to 2006. Progress in e-government usage could not be evaluated at EU level due to lack of data.

In 2006, half of EU-15 citizens said that they trusted the European Parliament, slightly less (46 %) the European Commission, and 41 % the Council of the EU. Compared to 2000 trust levels, this corresponds to a decrease of 3 percentage points for the European Parliament, stability for the European Commission and a decrease of 2 percentage points for the Council of the EU. Levels of confidence in each of the three institutions are evolving very much in parallel over time, which may partially reflect the varying degree of awareness of the respective roles of institutions by citizens. Levels of trust in the EU-25 are generally slightly higher than in the EU-15.

**Trust in the European Parliament has decreased, but is still higher than for other institutions**

Between 1997 and 2006, the number of new infringement cases brought by and against EU-15 Member States before the Court of Justice of the European Communities grew from 124 to 180 cases. This increase was slower between 2000 and 2006 than during the previous years, and a decline was even observed from 2003 to 2004 and 2005. The policy areas giving rise to most cases are environment, justice and home affairs, internal market and employment and social affairs.

**The increase in the number of infringement cases is slowing down ...**

Over the last years, the overall rate of transposition of European directives into national legislation increased to exceed 99 % in both the EU-15 and EU-25 in late 2006, which is more than the 98.5 % target set by the European Council in 2001. Some sectors are better performing than others, with competition and agriculture reaching 100 %, while justice and home affairs is only at 89.4 %. Moreover, the rate of transposition for research, information, education and statistics, justice and home affairs and taxation and customs union has decreased in comparison with 2000.

**... and the target for the transposition of Community law has been exceeded**

Voter turnout in national parliamentary elections decreased during the period from 1992 to 2000, in most EU-25 countries, but has stabilised after 2000. EU-25 Eurostat estimates reveal a decrease from 76.4 % in 1992 to 70.7 % in 2000, but the decrease has slowed down since then, with 69.9 % in 2006, and even a slight increase in the EU-15 from 73.4 % in 2000 to 73.7 % in 2006. Voter turnout in the 2004 European parliamentary elections in the EU-25 was below 45.7 %, compared to an estimated average turnout of 70.1 % in the national elections in the same year, and a gap of more than 20 % between national and European voter turnouts was observed in 15 countries. This gap reflects a certain degree of disinterest from European citizens for European matters.

**The decrease in participation in elections is stabilising...**



### ... and there is better access to public information

E-government availability is now widespread in all EU-25 countries, showing progress in the openness of public administrations. Usage has also increased in most countries from 2004 to 2006, with nearly a quarter of the population having used the Internet to interact with public authorities in 2006. There are however significant disparities amongst Member States in e-government availability and usage.

### There has been no shift towards environmental taxes

The shift from labour taxes to environmental taxes has not taken place: in recent years, the ratio of environmental taxes revenues to labour taxes revenues has remained remarkably stable.

#### Box 10.1: The White Paper on European governance — proposals for change and principles

The proposals for change made by the Commission in the White Paper can be decomposed into four groups and are underpinned by five principles:

##### Proposals for change

- Better involvement and more openness: European institutions should be more open and communicate more openly with the general public on European issues.
- Better policies, regulation and delivery: the EU should improve the quality, effectiveness and simplicity of regulatory acts.
- EU's contribution to global governance: a successful implementation of governance reform domestically is a pre-condition in order for the EU to make a case for credible change at global level.
- Refocused institutions: the Union should identify more clearly its long-term objectives such as the overall objective of sustainable development.

##### Principles

- Openness: the institutions should work in a more open manner. This is of particular importance in order to improve

the confidence in complex institutions...

- Participation: the quality, relevance and effectiveness of EU policies depend on ensuring wide participation throughout the policy chain – from conception to implementation...
- Accountability: roles in the legislative and executive processes need to be clearer. Each of the EU institutions must explain and take responsibility for what it does in Europe ...
- Effectiveness: policies must be effective and timely, delivering what is needed on the basis of clear objectives, an evaluation of future impact and, where available, of past experience...
- Coherence: policies and action must be coherent and easily understood...

The application of these five principles reinforces those of proportionality and subsidiarity. From the conception of policy to its implementation, the choice of the level at which action is taken (from EU to local) and the selection of the instruments used must be in proportion to the objectives pursued.

### Rationale for the selection of indicators

The selected indicators are intended to tackle progress in some of the main policy areas highlighted in the renewed sustainable development strategy (Box 10.2.) and towards the principles defined in the White Paper (Box 10.1).

The chapter contains no headline indicator as no indicator was judged both robust and policy-relevant enough to provide a comprehensive overview of the good governance concept. The former headline indicator on the 'level of citizens' confidence in EU institutions' presented in the 2005 report is used mainly as a contextual indicator, providing background information on the perceived performance of the main EU institutions (Council, Parliament, Commission), and partially relating to the principle of accountability defined in the White Paper.

The other indicators are grouped into the three following subthemes:

- **Policy coherence and effectiveness:** this subtheme focuses on better regulation and policy coherence as highlighted in the renewed sustainable development strategy. The current indicators mainly focus on the vertical dimension of policy coherence, i.e. coherence between EU and national levels, and measure two different aspects of the implementation of Community law, through the number of infringement cases brought

before the European Court of Justice, and the level of transposition of Community directives in national legislation. Three additional indicators have been identified as needing to be developed: 'volume of complaints to the Commission' would provide a wider indication of the extent of coherence being achieved, 'administrative cost imposed by legislation' would monitor the effectiveness of EU policies, and 'impact assessment' would give more insight into horizontal policy coherence, i.e. between sectoral policies.

- **Openness and public participation:** this subtheme focuses on the principles of an open and democratic society and the involvement of citizens found in the renewed strategy. Selected indicators on voter turnout in both EU and national elections, on the availability and use of e-government by individuals illustrate the level of involvement of social actors in political life. The development of indicators on responses to EC public internet consultations, the level of involvement of consumer groups and companies, and/or the degree to which Member States run awareness campaigns would strengthen this subtheme.
- **Economic instruments:** this subtheme mainly relates to the 'polluter pays principle' and the focus on economic instruments in the strategy. The indicator presented, comparing environmental tax with labour tax revenues, refers to the strategy's request for Member States to 'consider to shift taxation from labour to resource and energy consumption and/or pollution'. The development of an indicator on the 'proportion of environmentally harmful subsidies' is needed to complete this subtheme and to monitor the objective for Member States to reform 'subsidies that have considerable negative effects on the environment and are incompatible with sustainable development'.

### Box 10.2: Objectives and principles related to good governance in the renewed sustainable development strategy

#### Policy guiding principles

- Policy coherence and governance: 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 integration: promote integration of economic, social and environmental considerations 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.
- Open and democratic society: guarantee citizens' rights of access to information and ensure access to justice. Develop adequate consultation and participatory channels for all interested parties and associations.
- Involvement of citizens: enhance the participation of citizens in decision-making. Promote education and public awareness of sustainable development. Inform citizens about their impact on the environment and their options for making more sustainable choices.
- Involvement of businesses and social partners: enhance the social dialogue, corporate social responsibility and private-public partnerships to foster cooperation and common responsibilities to achieve sustainable consumption and production.
- Make polluters pay: ensure that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human

health and the environment.

#### Better policy-making

- ... all EU institutions should ensure that major policy decisions are based on proposals that have undergone high quality impact assessment (IA), assessing in a balanced way the social, environmental and economic dimensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction. Other tools for policy-making include ex-post assessments of policy impacts and public and stakeholders participation.

#### Financing and economic instruments:

- The EU will seek to use the full range of policy instruments in the implementation of its policies. The most appropriate economic instruments should be used to promote market transparency and prices that reflect the real economic, social and environmental costs of products and services (getting prices right).
- Member States should consider further steps to shift taxation from labour to resource and energy consumption and/or pollution.
- By 2008, the Commission should put forward a roadmap for the reform, sector by sector, of subsidies that have considerable negative effects on the environment and are incompatible with sustainable development, with a view to gradually eliminating them.

## Potential linkages

The governance theme is potentially linked to all policy issues tackled in this report. Governance is indeed an all-embracing concept referring to the exercise of 'power' overall and concerns all the rules, procedures and practices that should lead to more effective policies in all domains.

### Linkages within good governance

Openness of institutions and participation of all to policy-making can contribute to improving the quality of life and raise the confidence of citizens and businesses in the political process. It could potentially increase policy coherence and effectiveness, for example by improving the level of implementation of EU policies, and reducing the level of complaints. Adequate use of economic instruments can also increase policy coherence, by reconciling economic growth and environmental protection, and by better integrating different policy areas, in particular through the removal of harmful subsidies.

### Linkages with the economic, social and environmental dimensions

At European level, policy coherence and effectiveness is expected to guarantee that both national and EU policies are set up and implemented in such a way that they are compatible with and contribute to the overall economic, social and environmental objectives, that is the three pillars of sustainable development. Breaches of Community law or lack of implementation may lead to imbalances and unfair competition among countries, thus also having impacts on citizens and businesses.

Technological development, by widening access to information will also help to improve the involvement and awareness of all stakeholders. In some fields such as health and education, the positive impacts are expected to be particularly significant.

The goal of good governance is however not only to open up policy-making to make it more inclusive but also more accountable. At the same time, more sustainable development requires business and consumers to take more responsibility. This concerns all economic sectors, whether industry, energy, transport, agriculture and/or households, and all areas where environmental pollution may occur, such as air, water, land and soil, and waste arising.

### Linkages with global partnership

In addition, the EU has a major role to play in terms of global governance, not only with regard to the respect of international agreements such as the Kyoto Protocol but also to commitments towards global development. EU policies in domains such as climate change, air pollution, energy supply and resource use in general, external trade, demography in particular in relation to immigration and the ageing of the population, and others will both have internal and external impacts.

#### Further reading on good governance in Europe

European governance – Renewing the Community method, COM(2001) 727

European governance: better lawmaking, COM(2002) 275

Communication from the Commission on impact assessment, COM(2002) 276

Better regulation for growth and jobs in the European Union, COM(2005) 97

i2010 – A European information society for growth and employment, COM(2005) 229

A strategic review of better regulation in the European Union, COM (2006) 689

i2010, Annual information society report 2007, COM(2007) 146

## Citizens' confidence in EU institutions

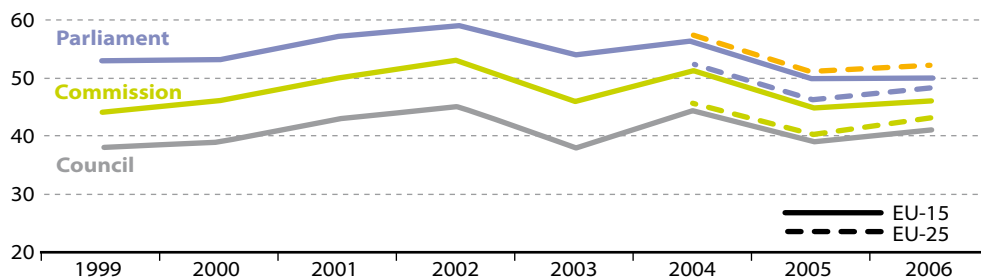


**Definition:** The level of citizen's confidence in EU institutions (Council of the European Union, European Parliament and European Commission) is expressed as the share of positive opinions (people who declare that they 'tend to trust') about the institutions. The indicator is based on the *Eurobarometer*, a survey which has been conducted twice a year since 1973 to monitor the evolution of public opinion in the Member States.

Potential replies to the question on the level of confidence include 'tend to trust', 'tend not to trust' and 'don't know' or 'no answer'. 'Trust' is not precisely defined and could leave some room for interpretation to the interviewees.

The indicator gives an indication of the perception of the fulfilment at the European level of some of the policy guiding principles highlighted in the renewed sustainable strategy. The confidence in institutions should be a key to measure the implementation of some of the good governance principles outlined in the White Paper, such as openness which is thought to be 'of particular importance in order to improve the confidence in complex institutions', accountability which implies that 'each of the EU institutions must explain and take responsibility for what it does in Europe', effectiveness as 'policies should be effective and timely' and coherence which involves that 'policies and action must be coherent and easily understood'.

Nevertheless, this indicator should be interpreted with care given that perception can be influenced by a variety of factors and that in particular, as noted in *Eurobarometer* reports, the low level of public awareness of the various EU institutions can also have a direct impact on the indicator..



### Indicator relevance

**Figure 10.1:** Level of citizens' confidence in EU institutions (%)

NB: The 2006 value for the Council refers to April, as opposed to December for the other institutions.

Source: European Commission, *Eurobarometer* opinion poll.

### Analysis

In 2006, half of EU-15 citizens said that they trusted the European Parliament, and slightly less (46 %) said that they trusted the European Commission. The level of trust for the Council of the EU was again slightly lower at 41 %. Compared to 2000 trust levels, this corresponds to a decrease of 3 percentage points for the European Parliament, stability for the European Commission, and a decrease of 2 percentage points for the Council of the EU. The dip observed in 2005 coincides with the debate on the Constitutional Treaty and the referendums in France and the Netherlands.

As the three curves have moved mostly in parallel, there is a great stability in the ranking of the three institutions in terms of public confidence. To some extent, these trends may partly reflect the varying degree of awareness of the various institutions by citizens, which is higher for Parliament, due to participation in elections, than for the other two institutions. New Member States show greater trust in EU institutions, a trend which seems to be amplifying since 2004: EU-25 figures were 2 percentage points above EU-15 figures in 2006, with 52 % of EU-25 citizens trusting the European Parliament, 48 % the European Commission, and 43 % the Council of the EU. In 2005, the gap was of 1 %, and there was no gap in 2004.

## Policy coherence and effectiveness

## Infringement cases

**Definition:** The indicator measures the **total number of new actions for failure of a Member State to fulfil its obligations brought before the Court of Justice**. The referral to the Court is the last stage in 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 (by far the largest group with 96 % of actions in 2006), but also actions for annulment, for failure to act, for damages or on arbitration clauses.

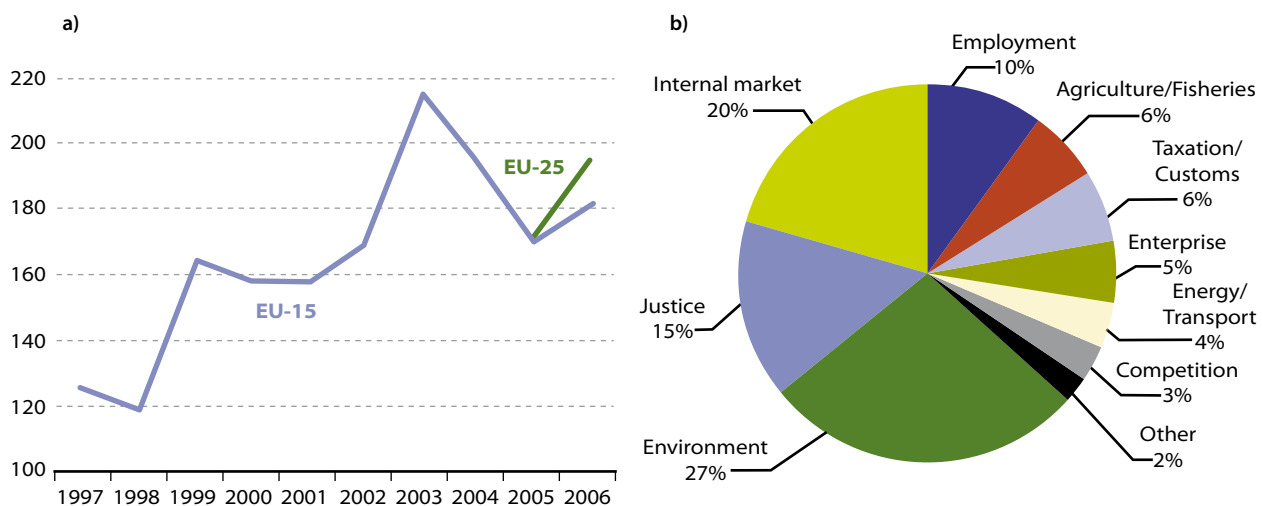
It should also be added that infringement cases can cover cases of different nature, including not only failure to transpose or to notify the transposition of EU directives, but also the lack of conformity of a national law with the rules of the EC Treaty, or a regulation. Eventually the indicator covers as well cases where the consistent administrative practice of a Member State authority is not in conformity with Community law.



## Indicator relevance

The indicator provides a measurement of the implementation of Community law at national level, and gives some insight into areas which cause difficulties to Member States. It illustrates an aspect of policy coherence between the EU and the Member States. One of the guiding principles in the renewed sustainable development strategy is to promote coherence at all levels of political action.

Figure 10.2: Number of new infringement cases: (a) total and (b) by policy area in EU-25 in 2006 (%)



Source: Court of Justice of the European Communities

## Analysis

Between 1997 and 2000, the number of new infringement cases brought by and against EU-15 Member States before the Court of Justice of the European Communities grew from 124 to 157 cases, by around 8.2 % per year on average, and then only to 180 cases six years later in 2006, representing a 2.3 % annual average growth. After a historical peak at 214 cases registered in

2003, followed by a drop in 2004-2005, a new increase in the number of infringement cases has prevailed in 2006. The 2004 enlargement Member States have only been recently included in the indicator. First results reveal that only one action was registered in 2005 and 13 in 2006.

The situation in the various policy areas varies greatly, showing the persistent dominance over time of the two areas 'environment' and 'justice and home affairs', while two other areas, 'internal market' and 'employment and social affairs', are on the increase. In 2006, these four major areas contributed all together to 73.1 % of a total of 201 actions for failure of a Member State to fulfil its obligations, with 54 actions (26.9 %) linked to environmental matters, 31 (15.4 %) to justice and home affairs, 41 (20.4 %) to internal market issues and 21 (10.4 %) to employment and social affairs. The fifth area, 'agriculture and fisheries' is on the decline.

## Policy coherence and effectiveness

## Transposition of Community law

**Definition:** The indicator measures the progress in the notification by Member States to the European Commission of the national measures for the implementation of directives in all sectors. It is calculated as the **percentage of directives for which measures of implementation have been notified among the total number of directives applicable** on the reference date. Applicable directives are all adopted directives (not repealed) where the transition phase has expired and which require implementation in the Member States' internal legal order (within a deadline or prior to the reference date) irrespective of the fact that they have been implemented by one or more Member States.



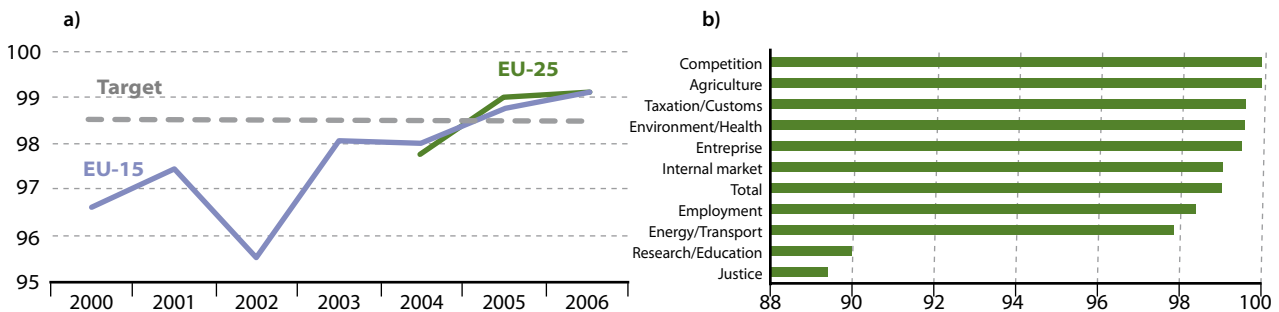
## Indicator relevance

The indicator measures the state-of-art in the notification by Member States of measures for the effective application of Community law at national level. 'Ultimately the impact of European Union rules depends on the willingness and capacity of Member State authorities to ensure that they are transposed and enforced effectively, fully and on time. Late transposition, bad transposition and weak enforcement contribute to the public impression of a Union which is not delivering' <sup>(224)</sup>.

<sup>(224)</sup> European governance, a White Paper, COM(2001) 428.

Therefore, the indicator can be considered as a measure of policy coherence between the European Union and its Member States, which is one of the principles included into the renewed sustainable strategy.

Figure 10.3: Transposition of Community law (%): (a) total and (b) by policy area in 2006 (EU-25)



Source: European Commission, Secretariat-General.

## Analysis

In 2001, the European Council set the target of a 98.5 % rate of implementation of Community law by national authorities. This target was attained in the course of 2005, and in late 2006, levels were exceeding 99 % in both the EU-25 and EU-15. If all sectors are close to or above 90 %, the rates of transposition in research, information, education and statistics, justice and home affairs and to a much lesser extent taxation and customs union have decreased in comparison to 2000. Nonetheless, these trends do not significantly affect the overall transposition rate, as these three sectors altogether represent less than 10 % of the total number of directives to be implemented. The quantitative importance of individual sectors varies greatly, with environment, health and consumer protection and enterprises contributing for more than two-thirds of the total number of directives to be implemented.

If in 2004, the EU-25 rate of transposition was lower than the EU-15 rate, and in 2006, was almost on a par with it, translating a more rapid progression (1.4 percentage points in the EU-25 versus 1.1 points in the EU-15).



## Voter turnout in national and EU parliamentary elections

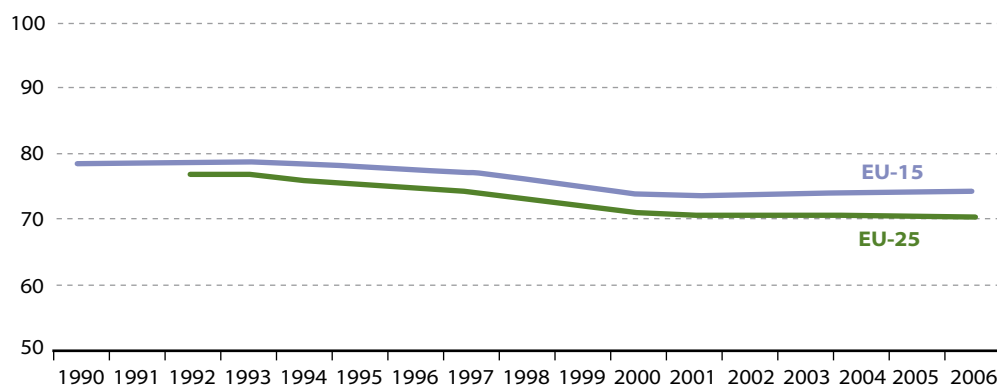


**Definition:** Both indicators measure the **percentage of the population who cast a vote** (or 'turn out') at an election, **in the total population which has the right to vote**. The turnout includes those who cast blank or invalid votes. In Belgium, Luxembourg and Greece, voting is compulsory. In Italy, voting is a civic obligation (no penalty).

The two indicators are not fully comparable as they refer to different dates of elections and to different populations of reference. Nevertheless, the magnitude of the discrepancies they illustrate calls for a comparison between both, regardless of methodological shortcomings.

Although no linear relationship exists between voter turnout and democratic development, voter turnout is a key aspect of citizens' participation in public affairs at national or EU level. The indicator is related to the two renewed sustainable development strategy policy guiding principles 'open and democratic society' and 'involvement of citizens'.

### Indicator relevance



**Figure 10.4:** Estimated EU voter turnout in national parliamentary elections (%)

Source: Eurostat estimates based on data from the International Institute for Democracy and Electoral Assistance (IDEA).

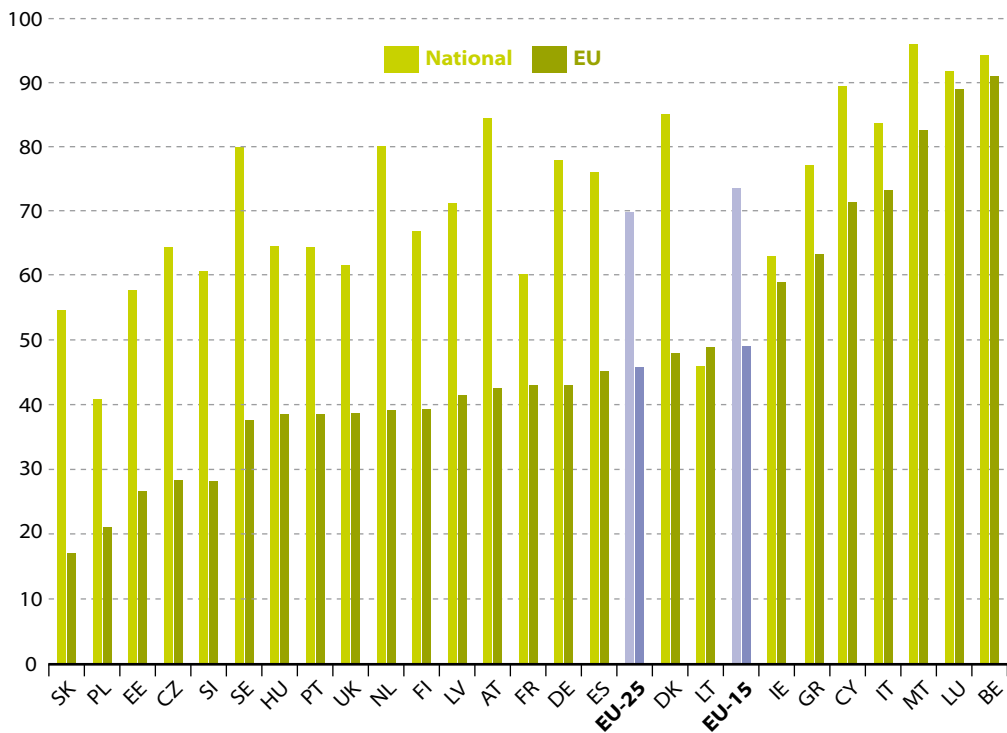
Voter turnout in national parliamentary elections decreased in most EU-25 countries from 1995 to 2006, but remained above 50 % in all countries, except Poland (40.6 % in 2005) and Lithuania (46.1 % in 2004). The decrease in voter turnout seems to have stabilised after 2000 however. According to Eurostat estimates, voter turnout decreased in the EU-25 from 76.4 % in 1992 to 70.7 % in 2000, and then only to 69.9 % in 2006. The decrease was less severe in the EU-15, from 78 % in 1990, to 73.4 % in 2000, with even a slight increase at 73.7 % in 2006.

**Figure 10.5:**  
Voter turnout in  
national (latest  
year available) <sup>(225)</sup>  
and EU (2004)  
parliamentary  
elections (%)

NB: The EU-25 figure for  
national elections is a  
Eurostat estimate.

Source: International  
Institute for Democracy  
and Electoral Assistance  
(IDEA) and European  
Parliament.

<sup>(225)</sup> Data for national elections  
refer to the last year where  
national parliamentary  
elections were held. For  
all countries, this year is  
located between 2002 and  
2006.



## Analysis

The 2006 Eurostat estimate for the voter turnout in the national elections was slightly below 70 % for the EU-25, and somewhat higher, 73.7 % in the EU-15. On the other hand, voter turnout in 2004 EU parliamentary elections was below 50 % (45.7 % in the EU-25 and 49.1 % in the EU-15), with 18 countries under 50 % (from 17 % in Slovakia to 48.4 % in Lithuania), and seven countries between 58.8 % (Ireland) and 90.8 % (Belgium). The gap between the two turnouts (more than 20 % in 15 Member States) reflects to some extent a certain degree of disinterest from EU citizens for EU matters, or that the EU parliamentary elections are not perceived as having a sufficient impact on European Union policies. This gap is similar to the one observed in the previous European parliamentary elections, in 1999; when the EU-15 turnout was 49.8 %, compared to an estimated 74.4 % for national elections. Obviously this analysis does not apply for countries where voting is compulsory.



## E-government availability

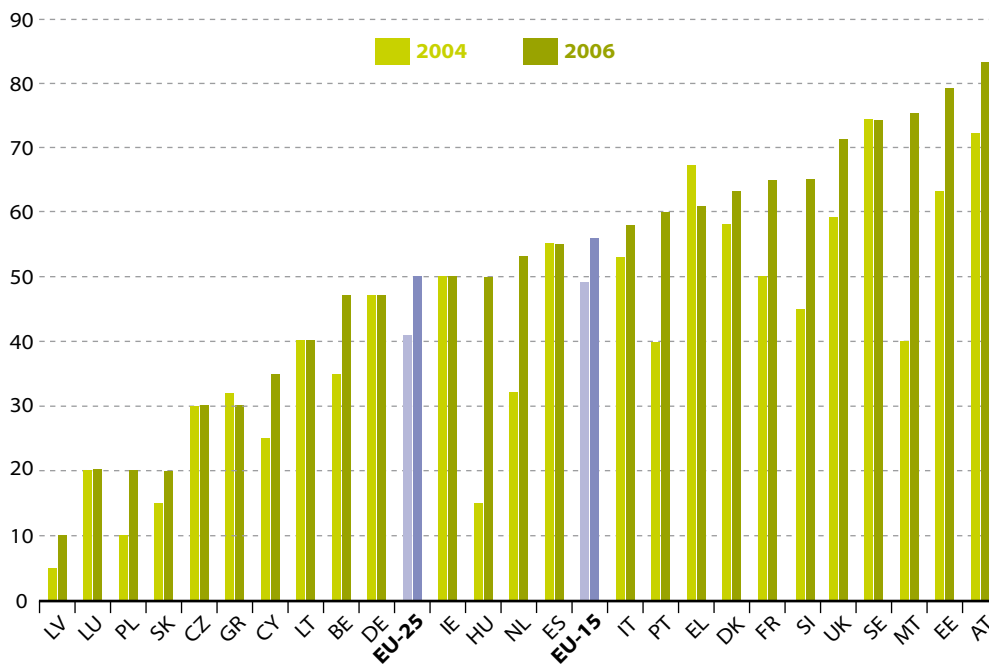


**Definition:** E-government availability shows the **percentage of the 20 basic services which are fully available online**, i.e. for which it is possible to carry out full electronic case handling. For example, if in a country 13 of the 20 services were measured as being 100 % available online, and one service was not relevant (e.g. does not exist), the indicator will be 13/19 which represents 68.4 %. Measurement is based on a sample of URLs of public websites agreed with Member States as relevant for each service.

One of the policy guiding principles in the renewed sustainable development strategy is to guarantee citizens' rights of access to information, and to develop adequate consultation and participatory channels. The e-government availability indicator is specifically intended to measure progress achieved by public administrations to become more open. In 2000, the Lisbon European Council already stressed that 'real efforts must be made by public administrations at all levels to exploit new technologies to make information as accessible as possible'. The 2005 eEurope action plan included as a target that 'by end 2004, Member States should have ensured that basic public services are interactive'. E-government is also a priority of the 'i2010' initiative <sup>(226)</sup>, which aims 'to foster inclusion, better public services and quality of life through the use of ICT'.

### Indicator relevance

<sup>(226)</sup> i2010 — A European information society for growth and employment, COM(2005) 229.



**Figure 10.6:** E-government availability by country, 2004 and 2006 (%)

Source: Eurostat.

E-government on line availability is currently widespread in all EU-25 countries, even if the basic services that are fully available on line are differently represented across Member states. Between 2004 and 2006, e-government on line availability increased in all countries except in Greece and Finland, and remained unchanged in the Czech Republic, Lithuania, Germany, Ireland, Spain and Sweden. In 2006, Member States with at least 75 % of basic administrative

### Analysis



services fully available online were Austria, Estonia and Malta. At the other end, Latvia, Luxembourg, Poland and Slovakia had less than 25 %. In the EU-15, availability increased from 36 % in 2002 to 56 % in 2006 (see additional figures on the SDI website).

It is difficult to interpret this indicator in more detail in terms of sustainable development objectives as nothing is known about the administrative or policy areas in which the citizens use e-government. Nonetheless, in its latest progress report <sup>(227)</sup>, the Commission noted that ‘in 2006, online public services grew more mature most visibly in the areas of e-government and e-health’ and that ‘Member States are making progress in their national e-government initiatives’.

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<sup>(227)</sup> i2010 — Annual information society report 2007, COM(2007) 146.



Openness and public participation

## E-government usage by individuals



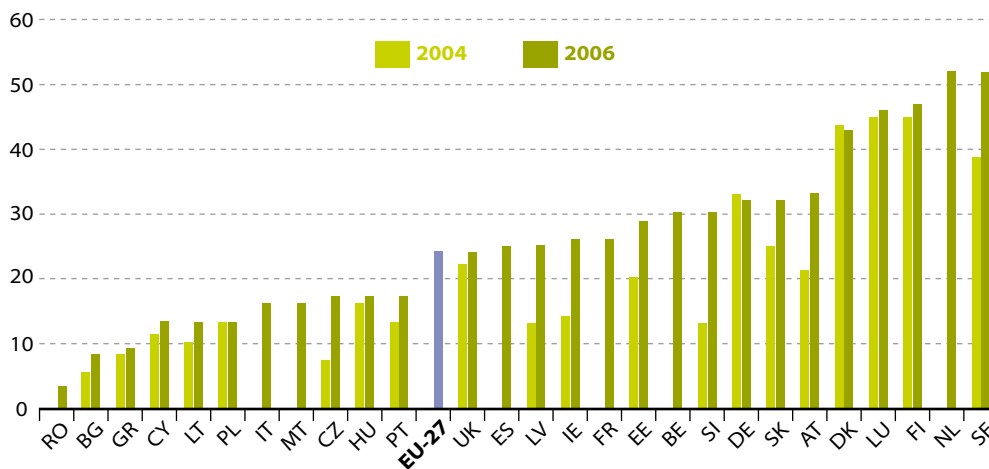
**Definition:** E-government usage by individuals measures the **percentage of individuals aged 16 to 74 who have used the Internet, in the last three months, for interaction with public authorities** (i.e. having used the Internet for one or more of the following activities: obtaining information from public authorities websites, downloading official forms, sending completed forms).

Policy guiding principles in the renewed sustainable development strategy include developing adequate consultation and participatory channels, and enhancing the participation of citizens in decision-making. Through the use of e-government, citizens can have greater access to information from authorities, enabling them to understand where their taxes are spent and how decision-making is done. E-government usage can also foster direct communication between citizens and policy-makers. Through online forums, virtual discussion rooms, and electronic voting, citizens can express their views, directly question the decision-makers, and so contribute with an informed opinion to the democratic process<sup>(228)</sup>. The 'i2010' initiative<sup>(229)</sup> aims 'to foster inclusion, better public services and quality of life through the use of ICT', focusing amongst others on making ICT systems easier to use for a wider range of people, and on promoting ICT-enabled public services.

### Indicator relevance

<sup>(228)</sup> The role of e-government for Europe's future, COM(2003) 567.

<sup>(229)</sup> i2010 – A European information society for growth and employment, COM(2005) 229.



**Figure 10.7:** E-government usage by individuals, by country, 2004 and 2006 (%)

NB: PL, UK and SE figures for 2006 refer to 2005.

Source: Eurostat.

E-government usage increased for most countries for which data were available, except Germany and Denmark. In 2006, nearly a quarter of the EU-27 population had used the Internet for interaction with public authorities. Usage was highest in the Netherlands and Sweden, with more than half the population using the internet, and lowest in Romania, where usage was less than 5 % of the population. It is interesting to note that there is not necessarily a direct correlation between the proportion of administrative services available online, and e-government usage by individuals: while e-government availability decreased from 2004 to 2006 in Greece and Finland, usage actually increased. On the other hand, usage decreased slightly in Germany and Denmark, whereas availability had been stable or increased. Some countries such as Luxembourg or Slovakia have a relatively high level of usage of e-government when the availability of services is relatively low (both 20 %).

### Analysis

## Economic instruments

## Environmental and labour taxes

**Definition:** The indicator compares the shares of both environmental and labour taxes in total tax revenues.

Environmental taxes are defined as taxes which tax base is a physical unit (or proxy of it) of something that has a proven, specific negative impact on the environment. Environmental tax revenues stem from four types of taxes: energy taxes (which contribute around three-quarters of the total), transport taxes (about one fifth of the total) and pollution and resource taxes (about 4 %).

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). On average, about 65 % of labour taxes consist of social contributions.

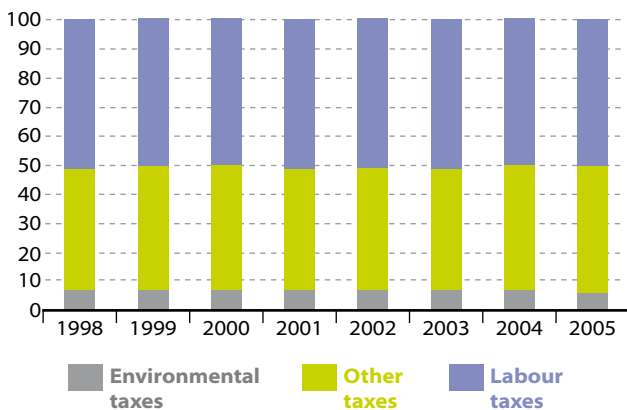


## Indicator relevance

One of the policy guiding principles of the renewed sustainable development strategy is to 'ensure that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human health and the environment'. More specifically, the strategy requires Member States to 'consider further steps to shift taxation from labour to resource and energy consumption and/or pollution'. Such measures are expected to 'make work pay' and boost labour demand thus not only reducing 'negative environmental impacts in a cost-effective way' but also increasing employment <sup>(230)</sup>.

<sup>(230)</sup> A year of delivery — Implementing the renewed Lisbon strategy for growth and jobs COM(2006) 816.

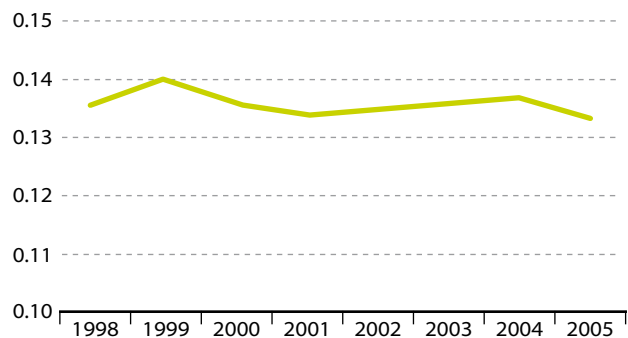
**Figure 10.8: EU-27 shares of environmental and labour taxes in total tax revenues (%)**



NB: 2004 figure used for 2005 for Portugal.

Source: European Commission services.

**Figure 10.9: EU-27 ratio of environmental taxes to labour taxes**



NB: 2004 figure used for 2005 for Portugal.

Source: European Commission services.

## Analysis

The EU-27 share of environmental taxes in total tax revenues fluctuated slightly between 6.8 and 7% in the pre-2000 period, before declining progressively to 6.6 % in 2005. The decline in the share of environmental taxes in recent years may be partly attributed to a greater reliance on other market-based instruments such as emissions trading or tax breaks fostering sustainable consumption and production, to growing pressure to reduce taxation of energy in light of

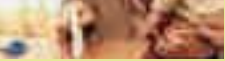
the strong increases in the oil price recorded in the last few years and to reduced consumption of energy products due to those price increases <sup>(231)</sup>.

For labour taxes, the share declined from 52.6 % to 50.1 % between 1995 and 2000, and then increased slightly up to 2003 before decreasing again to 49.8 % in 2005. This reflects the difficulty in implementing reductions in labour taxes for the EU as a whole, despite the implementation of environmental tax reforms in some Member States to reduce the tax burden on labour (amongst others Denmark, Germany, Netherlands, Austria, Sweden, Finland, Slovenia and the United Kingdom).

The ratio between the revenues of environmental taxes and labour taxes remained remarkably stable throughout the period, with only some small fluctuations, and stood at 0.133 in 2005, at the same level as in 1995, and slightly lower than in 2000. Therefore the shift from labour taxes to environmental taxes has not occurred.

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<sup>(231)</sup> *Taxation trends in the European Union: Data for the EU Member States and Norway, 2007 edition.* European Commission, Directorate-General for Taxation and Customs Union and Eurostat.



## Methodological notes

### Citizens' confidence in EU institutions

The level of citizen's confidence in each EU institution (European Parliament, European Commission and Council of the European Union) is expressed as the share of positive (people who declare that they 'tend to trust') opinions about this institution.

The survey used is the standard *Eurobarometer*, established in 1973. Each survey consists of approximately 1 000 face-to-face interviews per Member State (except Germany: between around 1 500 and 2 000, Cyprus: 500 until autumn 2004 then 1 000 including 500 for the Republic of Cyprus and 500 for the Turkish Cypriot Community, Luxembourg: around 500-600, Malta: 500, the United Kingdom 1 300). Reports are published twice yearly, in spring and autumn of each year. The data presented here cover the results from autumn surveys.

The surveys are conducted by national poll institutes and the INRA-Europe International Research Associates- Coordination Office European network.

### Voter turnout in national and EU parliamentary elections

The information concerning the 'voter turnout in national parliamentary elections' was extracted from the website of the International Institute for Democracy and Electoral Assistance ([www.idea.int](http://www.idea.int)). The information concerning the 'voter turnout in EU parliamentary elections' was extracted from the European Parliament website ([www.europarl.europa.eu](http://www.europarl.europa.eu)).

The indicator is defined as the level of participation of voters in European Parliamentary elections. The number of those who cast a vote or turn out at an election includes those who cast blank or invalid votes.

The Eurostat estimates of EU averages are calculated on the basis of weighted linear extrapolations of individual country averages.

### Infringement cases

The information concerning 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).

The total number of infringement cases – and its breakdown by policy area, covers all new cases. It consists mainly of actions for failure of a Member State to fulfil its obligations brought before the Court of Justice and covers actions under Articles 93, 169, 170, 171 and 225 of the [EC Treaty](#) (now Articles 88 EC, 226 EC, 227 EC, 228 EC and 298 EC), [Articles 141 EA, 142 EA and 143 EA](#) and [Article 88 CS](#). The other actions are labelled: actions for annulment (about 4 % of total cases in 2006), actions for failure to act, actions for damages and actions on arbitration clauses (0 % in 2006).

The number of new infringement cases is not available as a breakdown by Member State. For this breakdown, only the number of actions for failure to fulfil obligations is available.

### Transposition of Community law

The information concerning the 'transposition of Community law' was extracted from the annual reports from the Commission on the monitoring of the application of Community law, for all years except 1996. For 1996, the data come from the latest monthly report available (November 1996).

The indicator looks at the situation of the notification by Member States of the total number of national measures implementing directives. The percentage of implemented directives is the ratio: directives for which measures of implementation have been notified by Member States, divided by directives applicable on the reference date by Member States.

### E-government availability and usage

The indicator covers the percentage of individuals (aged 16-74) using the Internet to interact with public authorities (i.e. having used the Internet for one or more of the following activities; 'obtaining information from public authorities' websites', 'downloading official forms', 'sending completed forms').

The data are obtained from the national surveys by the NSIs using representative samples, which implement the Eurostat model for a Community survey on ICT usage by households and individuals carried out once a year. 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.

### Tax revenues <sup>(232)</sup>

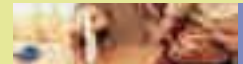
The data used for compilation of the indicators come from:

- 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 subsector) available in the Eurostat reference database,
- lists of taxes and social contributions specified according to national classification of taxes and social contributions provided by Member States.

The data comparability has been enhanced by the improved consistency and harmonised computation of ESA 95 national accounts data. The economic allocation of the particular taxes to the respective categories consumption, labour and capital as well as the identification of environmental taxes has been done in coordination with the Member States.

<sup>(232)</sup> *Taxation trends in the European Union: Data for the EU Member States and Norway*, 2007 edition, European Commission, Directorate-General for Taxation and Customs Union and Eurostat.





Data for 2005 should be regarded as provisional. In very few cases, estimates at the detailed level have been used if statistics were not available: in those cases, the estimates were either supplied by Member States administrations or computed using the growth rate of the corresponding aggregate tax category.

Total taxes are defined (using ESA 95 classification <sup>(233)</sup>) as a sum of:

- taxes on production and imports (ESA 95 code: d2),
- current taxes on income and wealth, etc. (ESA 95 code: d5),
- capital taxes (ESA 95 code: d91),
- actual compulsory social contributions (ESA 95 codes: d61111+ d61121+ d61131)

after deduction of capital transfers from general government to relevant sectors representing taxes and social contributions assessed but unlikely to be collected (ESA 95 code: d995).

Taxes on production and imports (d2), for which the economic term 'direct taxes' is also used, comprise all the compulsory levies on producer units with respect to the production or importation of goods and services or the use of factors of production. They include VAT, import duties, excise duties and other specific taxes on services (transport, insurance etc.) and on financial and capital transactions. They also include other taxes on production (d29) defined as 'taxes that enterprises incur as a result of engaging in production, independently of the quantity or value of the goods and services produced and sold', such as professional licences, taxes on land and buildings and payroll taxes.

Social contributions are payments to social insurance schemes made by employers on behalf of their employees

and employees or by self- and non-employed persons on their own behalf to make provisions for social insurance benefits to be paid.

Current taxes on income and wealth (d5) plus capital taxes including taxes such as inheritance or gift taxes (d91) correspond to the economic category of indirect taxes. Income tax (d51) is a sub-category including personal income tax (PIT) and corporate income tax (CIT) as well as capital gains taxes.

Labour taxes must be differentiated between employed and non-employed labour taxes. The former include income taxes (taxes on individual or household income including holding gains, for the part raised on labour income), other taxes on production (total wage bill and payroll taxes) and actual social contributions (compulsory employers' actual social contributions and compulsory employees' social contributions); the latter include income taxes (taxes on individual or household income including holding gains for the parts raised on social transfers and pensions) and actual contributions (compulsory social contributions by self- and non-employed persons for the part paid by social transfer recipients).

Environmental taxes consist of the revenues from four types of taxes: energy taxes, transport taxes (including registration and circulation car taxes) and pollution/resource taxes. Excluded are general value added tax (VAT) on environmentally harmful tax bases as well as royalty payments and other special taxes related to oil and gas extraction. For international comparison reasons and with regard to data availability, the framework is strictly limited to taxes as defined in the national accounts. This means that fees paid to government units in exchange for services received (e.g. waste and waste water collection services) are in general excluded.

<sup>(233)</sup> European system of accounts ESA 95: <http://circa.europa.eu/irc/dsis/nfaccount/info/data/esa95/esa95-new.htm>





# Conclusion

## 1. Evaluating progress towards sustainable development objectives

Out of the eleven headline indicators, ten measure the broad objectives of the sustainable development strategy, and can be considered to monitor the overall objectives of the key challenges. The socioeconomic development headline indicator completes the set by monitoring the strategy's key objective of economic prosperity.

An evaluation of progress since 2000, based on the headline indicators, presents a rather mixed picture. Recent developments can be considered as favourable for four of eleven indicators, namely those for: socioeconomic development, GDP growth increased by 1.6 % per year on average in the EU-27, from 2000 to 2006; sustainable consumption and production, resource productivity increased by 2.3 % per year on average between 2000 and 2004 in the EU-15, showing decoupling between resource use and economic growth; demographic changes, the employment rate of older workers increased by 6.6 percentage points between 2000 and 2006 in the EU-27, making it possible to reach the target of 50 % by 2010 if this rate of growth is sustained; and global partnership, the EU-15 official development assistance, as a share of gross national income increased overall by 5.1 % per year on average between 2000 and 2005, and the 2005 intermediate target was exceeded.

Changes are clearly unfavourable for the two indicators related to climate change and energy: EU-15 emissions of greenhouse gases had decreased by 2% in 2005 compared to their Kyoto base year value, when the objective is a decrease of 8% by 2008-2012. The share of renewables stood at only 6.7% in the EU-27 in 2005, compared to a target of 12% by 2012. Nevertheless, measures either planned or implemented mean that the Kyoto target can still be achieved and that further progress on the share of renewables is likely.

There has been moderate progress for the four other indicators monitoring the key challenges related to transport, natural resources, and

public health. There are no real signs of decoupling of energy consumption of transport from economic growth. The common birds index has been relatively stable since 2000, and fish catches taken from stocks outside safe biological limits showed levels in 2005 comparable to those of 2000. Healthy life-years at birth are growing more quickly compared to life expectancy, but by less than 1 % per year.

A quantitative evaluation of the rate of progress in reducing the risk of poverty was not possible because of a change in data source. A qualitative evaluation with respect to the objective is however possible, since the latest figure show that in 2005, 16 % of citizens in the EU-25 were still at risk of poverty, which cannot be considered to reflect a ‘decisive impact on the reduction of the number of people at risk of poverty and social exclusion’ required by the strategy by 2010.

**Table 11.1: Evaluation of changes in the headline indicators (from 2000)**

SDI theme	Headline indicator	EU-27 evaluation of change
Socioeconomic development	GDP per capita	
Climate change and energy	Greenhouse gas emissions	<sup>1</sup>
	Consumption of renewables	
Sustainable transport	Energy consumption of transport	
Sustainable consumption and production	Resource productivity	<sup>1</sup>
	Common birds	<sup>2</sup>
Natural resources	Fish catches	<sup>2</sup>
	Healthy life-years	<sup>1</sup>
Public health	Healthy life-years	<sup>1</sup>
Social inclusion	Risk of poverty	:
Demographic changes	Employment rate of older workers	
Global partnership	Official development assistance	<sup>1</sup>



**LEGEND:**

- favourable change/ on target path
- no or insufficient change
- unfavourable change/far from target path
- :
- insufficient data/EU aggregate not available
- <sup>1</sup> Evaluation based on EU-15.
- <sup>2</sup> Usual EU aggregates not applicable.

While the headline indicators provide a useful snapshot of progress across the key challenges, looking at other indicators within the set provides a fuller, more nuanced picture. A more detailed overview of progress is given by going through the operational objectives that can be measured, focusing more particularly on the concrete, quantitative targets within each key challenge.

**Key challenge 1: to limit climate change and its costs and negative effects to society and the environment**

The first operational objective for this key challenge is to fulfil the Kyoto Protocol commitments of EU Member States <sup>(234)</sup>. In 2005, EU-15 emissions of greenhouse gases had decreased by 2 % compared to their Kyoto base year value. This is still far from the EU-15 Kyoto target of reducing emissions by 8 % by 2008-2012. However, projections indicate that it is still possible to reach the Kyoto target when account is taken of existing and planned policies and measures, including the EU Emissions Trading Scheme, carbon sinks and the use of the Kyoto mechanisms. Of the ten new Member States that have a target under the Kyoto Protocol, nine

<sup>(234)</sup> Cyprus and Malta are non-Annex I parties and have no target under the Kyoto Protocol.



have already reduced their emissions significantly below their target levels, largely as a result of economic restructuring, and all are projected to meet their targets.

Regarding energy, the strategy identified quantitative targets including increasing the share of renewables in energy and electricity consumption to 12 % and 21 % respectively, as well as increasing the share of biofuels in transport fuel to 5.75 % by 2010 <sup>(235)</sup>. In spite of the increasing consumption of renewable energy, the share of renewables stood at only 6.7 % in the EU-27 in 2005, having increased at an average rate of only 0.2 percentage points per year since 2000 as a result of the relatively long lead time needed to build up capacity and the high growth rate of gross inland energy consumption. The growth rate of this indicator needs to be increased substantially to reach the 2010 target of 12 %. The share of renewables in electricity consumption reached 14 % in 2005. Achieving the 2010 target of 21 % would require growth of 1.4 percentage points per year, whilst since 2000 it has grown at only 0.04 percentage points per year. In 2005, the share of biofuels represented only 1.1 % for the EU-27, which is far from the 5.75 % 2010 target. However, the growth rate is rising.

Overall, the assessment of operational objectives and targets in the key challenge relating to climate change and energy confirms the unfavourable message given from the two headline indicators: based on historical trends, none of the targets appear to be within reach at this stage. However, measures planned or already implemented to save energy, to improve energy efficiency, to build up the capacity of renewables, mean that this picture is likely to improve in the future. A number of objectives were not evaluated due to lack of appropriate data, or because they are not adequately monitored by quantitative indicators <sup>(236)</sup>.

### Key challenge 2: 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

The first objective is to achieve a decoupling of the demand for transport from economic growth and the second is to achieve sustainable levels of transport energy use and to reduce transport greenhouse gas emissions. Energy consumption by transport grew at an average rate of 1.3 % per year between 2000 and 2005 in the EU-27, only slightly less than the 1.7 % average for GDP over the same period, showing no real signs of decoupling and failing to stabilise the energy use by transport. Transport greenhouse gas emissions are still growing, with an average annual growth rate of 1.2 % between 2000 and 2005 in the EU-27.

This contrasts with real progress towards the objective of reducing pollutant emissions from transport, with emissions falling by 4.4 % per year on average between 2000 and 2004 for ozone precursors, and by 4.2 % for particulates.

The objective of achieving a balanced shift towards environmentally friendly transport modes has not been achieved. The EU-27 share of road in inland freight transport has continued to increase relatively slowly since 2000 to reach 76.5 % in 2005, although for inland passenger transport, passenger-kilometres by car showed a relative stabilisation in the EU-15, but still reached 84.8 % of total inland passenger transport in 2004.

The average CO<sub>2</sub> emissions emitted per kilometre from new passenger cars have decreased steadily from 2000 to 2004 in the EU-15, at an average annual rate of 1.3 %, reaching 162.5 grams per kilometre in 2004. But this rate of change is slower than in the previous decade, and leaves some distance to the 2008/09 target of 140 grams per kilometre, or the 2012 target of 120 grams per kilometre.

Despite the increase in road traffic, there has been a steady reduction in the numbers killed in road accidents in both the EU-27 and the EU-15. The EU-15 is well on track to meet the target of halving the number of deaths by 2010 compared to 2000, although the EU-27 lags behind slightly.

<sup>(235)</sup> As of 2007 these targets have been superseded by a binding target of 20 % of renewables in energy consumption by 2020 with a minimum of 10 % for the share of biofuels in overall EU transport petrol and diesel consumption.

<sup>(236)</sup> In particular, progress towards the target that the global surface average temperature not rise by more than 2 °C compared to the pre-industrial level cannot be assessed directly by the current indicator, which only goes back to 1850. Available data on temperature changes are reported in the climate change and energy chapter. Monitoring the quantitative objective of reaching an overall saving of 9 % of final energy consumption requires measuring consumption before and after implementation of energy efficiency improvement measures, and therefore direct reporting from Member States.



Progress within this key challenge is uneven. For a number of targets there has been no real progress since 2000, as reflected in the headline indicator. For some other objectives, developments have been unfavourable, as is the case for the emissions of greenhouse gases. However, there are also favourable trends regarding the decrease in pollutant emissions, and the fall in the number of road deaths. Statistics currently available for transport noise, and public passenger transport services do not allow an evaluation of progress towards related objectives.

**Key challenge 3: to promote sustainable consumption and production patterns**

The strategy aims to promote sustainable consumption and production by addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation. While no single indicator within the current SDI set allows an adequate assessment of the carrying capacity of ecosystems, the indicator on resource productivity, gross domestic product (GDP) divided by domestic material consumption (DMC), is used as a proxy to evaluate the extent of decoupling. While DMC had remained relatively stable from 1990 to 2000 in the EU-15, it actually decreased between 2000 and 2004, while GDP carried on increasing (albeit at a slower rate), revealing an absolute decoupling of material consumption from economic growth during that period, and an increase in resource productivity by 2.3 % per year on average.

The strategy also seeks to improve the environmental and social performance for products and processes and to encourage their uptake by business and consumers. More and more businesses have chosen to report on their environmental performance through environmental management schemes such as EMAS, with the number of certified sites having grown at an annual average rate of 7.4 % in the EU-15 from 2000 to 2006. In addition, a rapidly increasing number of greener products and services are put on the market, with EU ‘eco-label’ awards growing on average by 37.1 % per year during the same period, with 326 flower awards in 2006 in the EU-15, and 338 in the EU-25. There is currently no EU-wide certification scheme for the social performance of products and processes.

Trends within this key challenge as measured by the current indicators are positive. The positive message given by the headline indicator, about decoupling economic growth of resource use, is reinforced by progress in terms of environmental performance of products and processes. However these objectives are imperfectly monitored. For example environmental impact of resource use and hidden flows linked to imports and exports are not considered, and an adequate evaluation of the uptake of more sustainable products and processes requires the measurement of the share of certified production in the total production value, and the share of market of eco-labelled products. Two out of four objectives cannot yet be monitored, as current available data and knowledge are insufficient to measure green public procurement at EU level, or the EU global market share of eco-innovations.

**Key challenge 4: to improve management and avoid overexploitation of natural resources, recognising the value of ecosystem services**

Progress towards the objective of reducing the overall use of non-renewable natural resources is measured through domestic material consumption, which decreased by 0.8 % per year on average between 2000 and 2004, reversing the trend of a slow average growth of 0.1 % per year from 1990 to 2000. As reported under the sustainable consumption and production key challenge, resource productivity <sup>(237)</sup> has increased by 2.3 % between 2000 and 2004. Recent data on eco-innovations, a means of improving resource efficiency, show that innovation seemed to have little effect on consumption of materials and energy at the EU-27 level, since only 8.4 % of enterprises cited this effect as highly important in 2004 when asked to classify the effects of their innovation <sup>(238)</sup>.

<sup>(237)</sup> Resource efficiency or resource productivity can be defined as the efficiency with which we use energy and materials throughout the economy, i.e. the value added per unit of resource input. In *Towards a thematic strategy on the sustainable use of natural resources COM(2003) 572*.

<sup>(238)</sup> *Community innovation statistics — Is Europe growing more innovative?* Statistics in focus 61/2007, European Commission, Eurostat.



The general objective related to renewable natural resources, such as fisheries, biodiversity, water, air, soil and atmosphere, is to improve their management and avoid their overexploitation. In 2005, the overall proportion of fish catches in EU-managed waters taken from stocks that are already below their safe biological limits returned to levels comparable to 2000, after several years at higher levels. However, this still represents a substantial proportion of catches, particularly for highly valued species (white fish). Data on water abstraction, only available for some countries, indicate that, between 2000 and 2004, pressure on water resources seems to have decreased thanks to declining abstraction rates of groundwater in many countries, while trends are less clear for surface water abstraction.

The specific target related to biodiversity is to halt its loss by 2010. The common birds index, used as a proxy for biodiversity, has shown signs of stabilisation, increasing by 0.5 % per year on average from 2000 to 2005, while its sub-component, the farmland birds index declined by 0.3 % per year over the same period. The index of sufficiency measures the degree of implementation of the habitats directive, a pillar of EU biodiversity legislation. It has steadily increased from 2003 to 2006, to reach 93 % in the EU-15, while the first assessment at EU-25 level resulted in an index of 82 %. In most bio-geographical regions, the index has reached at least 90 %.

Regarding forests, the EU should contribute effectively to achieving the four United Nations global objectives on forests by 2015. Fellings of forest trees as a share of increment, measuring the sustainability of timber production, rose in the EU-15 during the 1990s, from 54 % in 1990 to 63 % in 2000. Fellings continued to increase after 2000, but it is estimated that the ratio of fellings to increment continues to be sustainable.

The strategy also aims to avoid the generation of waste and to promote reuse and recycling. Since 2000, municipal waste generation in the EU-27 stabilised at around 520 kg per capita, following steady growth of 2.5 % per year between 1995 and 2000. From 2000 to 2005, it is estimated that recycling increased by more than 5 % per year.

The modest or no real progress message given by the two headline indicators on common birds and fish catches is reinforced by other indicators under this key challenge. For a number of objectives, such as restoring degraded marine ecosystems and soil quality, available data are not sufficiently developed to be included in an EU-level assessment.

#### **Key challenge 5: to promote good public health on equal conditions and improve protection against health threats**

Healthy life-years, monitoring the overall objective of promoting good health, has continued to grow, at a faster rate than life expectancy, meaning that a greater part of our lives will be lived free of serious disability, however, the average annual increase remains below 1 %.

Curbing the increase in lifestyle-related and chronic diseases is the first operational objective in this key challenge. There was a favourable trend in the death rate due to chronic diseases, which decreased by 2.0 % on average per year in the EU-27 between 2000 and 2004, and by 2.2 % in the EU-15. The latest data show that in 2003, depending on the country, between 30 and 64 % of young males aged between 25 and 34 were overweight or obese in 2003 and between 12 and 47 % of young women. The proportion of over-65s who are overweight or obese is considerably higher, ranging from 62 to 80 %.

Another objective 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. A proxy indicator for monitoring this objective is the production of toxic chemicals, which increased at 1.3 % per year on average between 2000 and 2005, slower than in the previous decade when it grew by 3 % per year, and there has also been a shift away from the two most dangerous classes towards less harmful toxic chemicals.

Finally, the suicide rate decreased on average by 2.2 % per year in the EU-27, and 0.7 % in the EU-15 between 2000 and 2004, reflecting some progress towards the strategy's objective of improving mental health and tackling suicide risks.

Healthy life-years, monitoring the overall objective of promoting good health, have increased slowly. Positive trends in a number of indicators monitoring the operational objectives, including the death rate due to chronic diseases, and the suicide rate are tempered by the negative development of increasing levels of toxic chemicals, although this is offset by a trend towards decreasing toxicity. Progress towards objectives related to capacity to respond to health inequalities, threats, food labelling, animal welfare, and information on environmental pollution has not been evaluated due to current lack of appropriate statistics.

**Key challenge 6: 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**

Evolution over time of the at-risk-of-poverty rate cannot be adequately assessed because of a change in data source. However, the first available data from the new Community statistics on income and living conditions (EU-SILC) show that in 2005, 16 % of citizens in the EU-25 were still at risk of poverty, which cannot be considered to reflect a 'decisive impact on the reduction of the number of people at risk of poverty and social exclusion' required by the strategy by 2010.

Progress towards the objective of ensuring a high level of social and territorial cohesion can be monitored through the dispersion rates of regional GDP per inhabitant and of regional employment rates. Overall, the dispersion rate of GDP per inhabitant decreased in the EU-27, by 1.8 percentage points per year on average from 2001 to 2004. The dispersion of employment rates decreased from 13 to 11.8 % in the EU-27, and from 13.4 to 10.9 % in the EU-15.

The strategy also requires 'supporting the Member States in their efforts to modernise social protection in view of demographic changes'. This refers to the need to ensure adequate protection in a financially sustainable manner. The main policy response is to increase labour market participation, as recognised in the following objective 'to increase the labour market participation of women and older workers according to set targets by 2010'. The female employment rate has grown in a positive way from 2000 to 2005. Progress in the female employment rate makes the Lisbon target of reaching 60 % of females in employment by 2010 appear within reach if growth is sustained. The employment rate of older workers, although still at much lower levels than the 25-54 category, increased by 6.6 percentage points between 2000 and 2006 in the EU-27. If this rate of growth is sustained, the target agreed in the 2001 spring Council of raising the employment rate of older workers to 50 %, is also within reach. However, the rate of increase in the average exit age from the labour market (59.9 years in 2001 and 60.9 years in 2005) will need to rise substantially to achieve the target of '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' as agreed in the 2002 spring Council.

Pensions adequacy is monitored by the aggregate replacement ratio, as well as the at-risk-of-poverty rate. It is clear that aggregate income declines in all Member States following retirement and that pensions can represent half of pre-retirement incomes in many. The risk of poverty of older people, at 19 % in 2005, exceeds the risk incurred by the total population by two or three percentage points in the EU-25.

Regarding the strategy's objective related to the employment of young people, the unemployment rate of young people has decreased slightly since 2000 to reach 17.4 % in 2006, compared to 7.9 % for the population as a whole. With respect to the objective of reducing early school leaving and increasing the educational standards of young people, the share of 18-24-year-olds who leave the





education system with only lower secondary education decreased in the EU-27 from 17.6 % in 2000 to 15.3 % in 2006. This rate of progress is too slow to reach the 2010 target of 10 %.

Within this key challenge, some developments towards reducing inequality across generations are positive, as underlined by the headline indicator for demographic changes: progress has been made in increasing the participation of older workers and women. Concerning social inclusion, although the headline indicator has not been evaluated over time because of a break in series, it is clear that the current risk of poverty cannot be evaluated favourably. This is re-emphasised by the lack of progress in reducing unemployment among young workers, and the insufficient progress towards the target on early school leavers. Objectives which cannot be monitored at EU level with currently available statistics include increasing employment of migrants and disabled persons, and reducing the negative effects of globalisation on workers and their families.

**Key challenge 7: to actively promote sustainable development worldwide and ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments**

One of the quantified targets of the strategy for this key challenge is to raise the volume of aid to 0.7 % of gross national income (GNI) by 2015, with an intermediate target of 0.56 % in 2010. After a low around the year 2000, there was a sharp increase in the EU-15 ODA/GNI contributions, resulting in an increase from 0.32 to 0.44 % between 2000 and 2005, which corresponds to an average annual growth of more than 17 % of disbursed amounts in absolute value. However this growth stalled in 2006, when ODA/GNI fell slightly to 0.43 %, when the EU fell slightly behind the 2010 intermediate target path. Few countries have achieved the 2015 target of 0.7 %.

The objective of increasing the effectiveness, coherence and quality of EU and Member States' aid policies concerns the period 2005–2010, and it is therefore too soon to evaluate progress. However one of the two ways suggested for increasing the quality and effectiveness of aid is through debt reduction and untying of aid. Bilateral ODA commitments for actions relating to debt such as forgiveness, swaps, buy-backs, rescheduling and refinancing grew by 43 % per year on average since 2000, to reach 35.3 % in 2005.

Wider objectives related to sustainable trade and international environmental governance are inadequately monitored due to the current lack of appropriate statistics.

**Key objective: economic prosperity**

The strategy aims 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 European Union'. Some of these objectives are related to goals and targets of the Lisbon strategy for growth and jobs.

GDP growth provides information on the dynamism of the economy, and its capacity to create jobs. In the second half of the 1990s, the performance of the EU-27 economy was relatively positive, with a growth rate of GDP per capita of more than 3 % in 2000. Following a deceleration of economic activity between mid-2000 and mid-2003, there have been some encouraging upturns in the EU economy particularly in 2006 with a 2.8 % growth rate.

Investment in the knowledge-based economy is important for sustainable development. Innovation, research expenditure, education, and training all affect the long-term competitiveness of the EU. In the EU-27, the share of the total turnover of enterprises engaged in innovation activity generated by new or significantly improved products (new to the market) stood at 8.6 % in 2004. However, large differences were observed between individual countries, ranging from less than 5 % in Cyprus to more than 20 % in three of the newer Member States: Bulgaria (24.5 %), Malta (22.0 %) and Slovakia (21.1 %) <sup>(239)</sup>. Investment in research and development

<sup>(239)</sup> This indicator was not presented in the report because data availability does not allow evaluation of progress over time. The latest data are taken from *Community innovation statistics - Is Europe growing more innovative?* Statistics in focus 61/2007, European Commission, Eurostat.



stagnated between 2000 and 2005, standing at 1.91 % of GDP in 2005, far from the Lisbon target of 3 % of GDP by 2010.

The share of persons with low educational attainment clearly decreased in the EU-27 from 35.6 % to 30 % overall between 2000 and 2006. However almost a third of the population aged 25-64 were still disadvantaged by low educational achievement in 2006. Lifelong learning increased from 7.1 % in 2000 to 9.6 % in 2006 in the EU-27, and from 8 to 11.1 % in the EU-15, showing an encouraging trend in the light of the Barcelona target of reaching 12 % by 2010, even though the EU-27 still lags behind.

Investment in the knowledge-based economy has been insufficient to boost EU labour productivity: its growth rate in the EU-15 dropped from 2.8 % in 2000 to 1 % in 2005. EU-25 figures were more stable, from 1.5 % in 2001 to 1.6 % in 2004. Gains in eco-efficiency as reflected by the energy intensity have been disappointing: while energy intensity decreased substantially between 1995 and 2000, it has fallen much slowly since 2000, well below the expectation of 1 % per year.

Concerning employment, if the second half of the 1990s saw strong growth, since 2000 the trend has been insufficient to reach the intermediate Lisbon employment rate target of 67 % in 2005. The employability of European workers appears to be strongly driven by educational attainment with employment rates varying by more than 30 percentage points between the least and the most skilled workers.

The positive picture presented by the headline indicator with the recent upturn of the economy is tempered by slow progress in terms of employment, investment in research and development, and gains in eco-efficiency as reflected by energy intensity. Improvements in education and training are more encouraging. Current statistics on innovation do not allow an evaluation of trends over time. The objective of providing high living standards is only partially evaluated by GDP growth. Other dimensions of well-being are reflected in other key challenges.

### Guiding principles and cross-cutting issues

Although there is no headline indicator for the good governance theme, a number of indicators monitor some of the guiding principles and cross-cutting issues not covered in other themes. These principles and objectives tend to be formulated in qualitative terms, and are difficult to monitor with existing statistics. Nevertheless, some partial conclusions can be derived from the analysis in this report.

According to the policy coherence and governance principle, the objective should be to promote coherence between all EU policies and coherence between local, regional, national and global actions in order to enhance their contribution to sustainable development. Vertical coherence has indeed improved: the increase in the number of infringement cases is slowing down, and the overall rate of transposition of European directives into national legislation increased to more than 99% in the EU-25 in 2006, exceeding the target of 98.5 % set by the Council in 2001.

Regarding the principles of open and democratic society, the decrease in participation in elections has stabilised since 2000, although there is still a gap of more than 20 % between national and European voter turnouts in 15 countries. Access to public information has improved: e-government availability is now widespread with 50 % of basic administrative services available online in the EU-25 in 2006. Usage has also increased in most countries from 2004 to 2006, with nearly a quarter of the population having used the Internet to interact with public authorities in 2006.

Finally, regarding the principle of making polluter pay, and the use of economic instruments, it is clear that the shift from labour taxes to environmental taxes advocated in the strategy has not taken place.



Adequate quantitative information is lacking to measure the principles of policy integration and of citizen, business and social partners involvement.

## 2. Is Europe on a sustainable development path?

The objective of this report is not to give an absolute evaluation of whether the EU is sustainable, as there is no political or scientific consensus as to what this state of sustainability would be, nor on what are the optimal levels for many of the indicators presented in this report. The EU sustainable development strategy highlights commonly agreed objectives to put Europe on what has been implicitly defined as a sustainable development path. This report therefore provides a relative assessment of whether Europe is moving in the right direction given these objectives and targets. In doing so, the focus is on 'sustainable development' rather than 'sustainability', as described in the introduction.

Based on the evaluation of the objectives and targets highlighted in the sustainable development strategy, the analysis in this report clearly shows that the European Union is not yet on a sustainable development path. This is particularly the case for the key challenge on climate change and clean energy, where, based on historical trends, none of the targets are within reach at this stage, although a number of measures and policies are now in place which should have a positive impact. In addition, there are a number of key challenges where progress is too modest. Policy areas where there have been positive developments include sustainable consumption and production, demographic changes, and global poverty. However, since assessments are relative, a positive evaluation does not necessarily mean that no further progress is necessary, but rather that these positive developments must be sustained to reach objectives and targets.

It is also of interest to examine changes in the evaluation of trends compared to the 2005 Eurostat monitoring report <sup>(240)</sup>. Twelve headline indicators were presented in the 2005 report, compared to eleven in this one, as no indicator is judged to be sufficiently robust to represent the entire theme of good governance. Eight of these eleven indicators are the same in both reports. In climate change and energy, the former headline indicator on gross inland energy consumption has now been replaced by the percentage share of renewables in gross inland energy consumption, which better reflects a key objective of the EU's energy policy. The 2007 headline indicator for demographic changes, the employment rate of older workers, has replaced the old-age dependency ratio which is only weakly policy-responsive. The headline indicator for natural resources has been extended to cover all common birds, instead of just farmland birds.

Seven of the headline indicators have similar evaluations to the 2005 edition. However, there have been some changes for GDP growth per inhabitant: it was evaluated as no change in 2005, and is now evaluated positively due to recent upturns in the economy. Common birds and fish catches, are now evaluated as no change, as trends have stabilised, whereas the evaluation of changes for farmland birds and fish catches in 2005 was unfavourable. The new headline indicator for demographic changes, the employment rate of older workers is evaluated positively, although continued progress is needed. Although resource productivity was already evaluated positively in 2005, there has in fact been further progress, from relative to absolute decoupling. There has therefore been an improvement in the trends of some policy areas since the last report.

## 3. Monitoring the renewed SDS: where are we now?

### A new monitoring cycle

Although a first report was published in 2005 based on the original set of indicators adopted in the same year, this is the first Eurostat monitoring report following the review of the strategy.

<sup>(240)</sup> *Measuring progress towards a more sustainable Europe – sustainable indicators for the European Union*, 2005 edition. European Commission, Eurostat.



The renewed strategy foresees that this monitoring report will be published every two years, and will feed into the Commission's progress report.

The renewed strategy contains a number of concrete objectives and measurable targets, as advocated in the review phase of the strategy <sup>(241)</sup>. While it is generally difficult to evaluate general and qualitative objectives based on quantitative information, the indicators in the SDI set are well suited to evaluating quantitative targets and concrete objectives. Regular reporting on progress towards these will make it possible to progressively build up a more accurate picture of how sustainable European development is.

<sup>(241)</sup> The 2005 review of the EU sustainable development strategy: initial stocktaking and future orientations, COM(2005) 37.

### Further development needs

Even if the reviewed set of sustainable development indicators could not be fully incorporated, the set of indicators presented here already incorporates many changes since the first set adopted in 2005, as a result of statistical development and adaptation to the renewed strategy. However, it is clear from the information presented in this report that there are limitations to some existing indicators, which need to be improved, and that some objectives are not adequately (or not at all) monitored due to lack of appropriate statistics. As specified in the renewed strategy, the Commission, in cooperation with Member States, will continue to 'develop and review indicators to increase their quality and comparability as well as their relevance to the renewed EU SDS'.

### Other perspectives

Because sustainable development is a complex issue, there is a need for a variety of perspectives. National sets of sustainable development indicators in EU Member States and the rest of the world may differ from the EU SDI set, reflecting different policy priorities, and different levels of availability of statistics. The capital approach, which is in the process of being assessed by the joint UNECE/OECD/Eurostat working group on statistics for sustainable development, should give useful insights into measuring sustainable development, with a view to maintaining stocks of economic, human, social and environmental capital to preserve future welfare opportunities for the next generations.

### Integrating sustainable development policy priorities

The overall aim of the sustainable development strategy is to 'achieve continuous improvement of quality of life both for current and for future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion.' It also further specifies that 'to that end it promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity.' The strategy therefore points to the different elements that influence human well-being, and the key challenges reflect these main components and associated threats. But these priorities cannot be considered separately, as there are many interlinkages between them, as illustrated in each of the theme overviews in this report. These need to be taken into account to exploit synergies between the different policy instruments used to implement EU policy and minimise trade-offs and. The renewed strategy indeed recognises that one of the main challenges to sustainable development is the non-integrated approach to policy-making.

Research is needed, and is under way, for a better understanding of the interlinkages between the different issues relevant to sustainable development, and in particular between the different priorities of the sustainable development strategy.



# Annex: Reviewed list of sustainable development indicators

THEME 1: SOCIO-ECONOMIC DEVELOPMENT		Key SDS objective: Economic prosperity	
Level 1	Level 2	Level 3	
1. Growth rate of GDP per inhabitant	<b>Sub-theme: ECONOMIC DEVELOPMENT</b>		
	2. Gross investment, by institutional sector	3. Dispersion of regional GDP per inhabitant	4. Net national income
		5. Gross household saving	
	<b>Sub-theme: INNOVATION, COMPETITIVENESS AND ECO-EFFICIENCY</b>		
	6. Labour productivity per hour worked	7. Total R&D expenditure	8. Real effective exchange rate
	9. <i>Turnover from innovation, by economic sector*</i>	10. <i>Effects of innovation on material and energy efficiency*</i>	
		11. Energy intensity	
<b>Sub-theme: EMPLOYMENT</b>			
12. Total employment rate	13. Employment rate, by gender and by highest level of education attained	14. Dispersion of regional employment rates	15. Unemployment rate, by gender and age group
THEME 2: SUSTAINABLE CONSUMPTION AND PRODUCTION		Key SDS challenge: Sustainable consumption and production	
		Key SDS challenge: Conservation and management of natural resources	
Level 1	Level 2	Level 3	
1. Resource productivity	<b>Sub-theme: RESOURCE USE AND WASTE</b>		
	2. <i>Generation of total waste*, by economic activity and GDP (proxy: Municipal waste generated per inhabitant)</i>	3. Components of Domestic Material Consumption	4. <i>Environmental impact of material consumption*</i> (proxy: Domestic Material Consumption, by material)
		5. Municipal waste treatment, by type of treatment method	6. <i>Generation of hazardous waste, by economic activity*</i>
		7. Emissions of acidifying substances, ozone precursors, and particulate matter by source sector, and GDP	
	<b>Sub-theme: CONSUMPTION PATTERNS</b>		
8. Electricity consumption by households	9. Final energy consumption, by sector	10. Consumption of certain foodstuffs per inhabitant	11. Motorisation rate
<b>Sub-theme: PRODUCTION PATTERNS</b>			
12. Enterprises with a registered environmental management system	13. Eco-label awards	14. Area under agri-environmental commitment	15. Area under organic farming
	16. Livestock density index		
<b>Contextual indicators</b>	- Number of households (for sub-theme Consumption patterns)		
	- Household expenditure per inhabitant, by category (for sub-theme Consumption patterns)		

\* Indicator under development



THEME 3: SOCIAL INCLUSION		Key SDS challenge: Social inclusion, demography and migration	
Level 1	Level 2	Level 3	
1. At-risk-of-poverty rate after social transfers	<b>Sub-theme: MONETARY POVERTY AND LIVING CONDITIONS</b>		
	2. At-persistent-risk-of-poverty rate	3. At-risk-of-poverty rate, by gender, by age group, and by household type	4. Relative at risk of poverty gap
		5. Inequality of income distribution	
	<b>Sub-theme: ACCESS TO LABOUR MARKET</b>		
	6. People living in jobless households, by age group	7. In-work poverty	8. Total long-term unemployment rate
	9. Gender pay gap in unadjusted form		
<b>Sub-theme: EDUCATION</b>			
10. Early school leavers	11. At-risk-of-poverty rate, by highest level of education attained	12. Persons with low educational attainment, by age group	13. Life-long learning
	14. <i>Low reading literacy performance of pupils*</i>	15. <i>ICT skills*</i>	
<b>Contextual indicator</b>	- Public expenditure on education (for sub-theme Education)		

\* Indicator under development

THEME 4: DEMOGRAPHIC CHANGES		Key SDS challenge: Social inclusion, demography and migration	
Level 1	Level 2	Level 3	
1. Employment rate of older workers	<b>Sub-theme: DEMOGRAPHY</b>		
	2. Life expectancy at age 65, by gender	3. Total fertility rate	4. Net migration, by age group
	<b>Sub-theme: OLD-AGE INCOME ADEQUACY</b>		
	5. Aggregate replacement ratio	6. At-risk-of-poverty rate for persons aged 65 years and over	
	<b>Sub-theme: PUBLIC FINANCE SUSTAINABILITY</b>		
7. General government consolidated gross debt	8. Average exit age from the labour market		
<b>Contextual indicators</b>	<ul style="list-style-type: none"> <li>- Old-age dependency ratio (for sub-theme Demographic changes)</li> <li>- Changes in public pensions expenditure (for sub-theme Public finance sustainability) and Changes in projected theoretical income replacement ratio (for sub-theme Public finance sustainability)</li> <li>- Public expenditure on care for the elderly (for sub-theme Public finance sustainability)</li> </ul>		



**THEME 5: PUBLIC HEALTH** *Key SDS challenge: Public health*

Level 1	Level 2	Level 3
	<b>Sub-theme: HEALTH AND HEALTH INEQUALITIES</b>	
1. Healthy life-years and life expectancy at birth, by gender	2. Death rate due to chronic diseases, by age group	3. Healthy life-years and life expectancy at age 65, by gender 4. Suicide death rate, by gender and by age group
	<b>Sub-theme: DETERMINANTS OF HEALTH</b>	
	5. Salmonellosis incidence rate in human beings	7. <i>Overweight people, by age group*</i> 8. <i>Present smokers, by gender and by age group*</i>
	6. Index of production of chemicals, by toxicity class	9. Population exposure to air pollution by particulate matter 10. Population exposure to air pollution by ozone 11. <i>Population living in households considering that they suffer from noise*</i> 12. Serious accidents at work

\* Indicator under development

**THEME 6: CLIMATE CHANGE AND ENERGY** *Key SDS challenge: Climate change and clean energy*

Level 1	Level 2	Level 3
	<b>Sub-theme: CLIMATE CHANGE</b>	
1. Total greenhouse gas emissions 2. Consumption of renewables	3. Greenhouse gas emissions by sector	4. Greenhouse gas intensity of energy consumption 5. Projections of greenhouse gas emissions 6. Global surface average temperature
	<b>Sub-theme: ENERGY</b>	
	7. Energy dependency	8. Gross inland energy consumption, by fuel 9. Electricity generation from renewables 10. Consumption of biofuels by transport 11. Combined heat and power generation 12. Implicit tax rate on energy

**THEME 7: SUSTAINABLE TRANSPORT** *Key SDS challenge: Sustainable transport*

Level 1	Level 2	Level 3
	<b>Sub-theme: TRANSPORT GROWTH</b>	
1. Energy consumption of transport	2. Modal split of freight transport	4. Volume of freight transport and GDP
	3. Modal split of passenger transport	5. Volume of passenger transport and GDP 6. Energy consumption, by transport mode
	<b>Sub-theme: TRANSPORT PRICES</b>	
	7. Road fuel prices	...
	<b>Sub-theme: SOCIAL AND ENVIRONMENTAL IMPACT OF TRANSPORT</b>	
	8. Greenhouse gas emissions by transport, by mode	10. Average CO <sub>2</sub> emissions per km from new passenger cars
	9. People killed in road accidents, by age group	11. Emissions of ozone precursors from transport 12. Emissions of particulate matter from transport



THEME 8: NATURAL RESOURCES		Key SDS challenge: Conservation and management of natural resources	
Level 1	Level 2	Level 3	
1. Common Bird Index 2. Fish catches taken from stocks outside safe biological limits	<b>Sub-theme: BIODIVERSITY</b>		
	3. Sufficiency of sites designated under the EU Habitats and Birds directives	4. <i>Red List Index for European species</i> *	
	<b>Sub-theme: FRESH WATER RESOURCES</b>		
	5. Surface and groundwater abstraction	6. Population connected to wastewater secondary treatment systems	
		7. Biochemical oxygen demand in rivers	
	<b>Sub-theme: MARINE ECOSYSTEMS</b>		
	8. <i>Concentration of mercury in fish and shellfish</i> *	9. Size of fishing fleet	
	<b>Sub-theme: LAND USE</b>		
	10. <i>Land use change</i> *, by category (proxy: Built-up areas)	12. Forest trees damaged by defoliation	
	11. Forest increment and fellings	13. <i>Critical load exceedance for nitrogen</i> *	

\* Indicator under development

THEME 9: GLOBAL PARTNERSHIP		Key SDS challenge: Global poverty and sustainable development	
Level 1	Level 2	Level 3	
1. Official Development Assistance (ODA)	<b>Sub-theme: GLOBALISATION OF TRADE</b>		
	2. EU imports from developing countries, by income group	3. EU imports from developing countries, by group of products	
		4. EU imports from least developed-countries, by group of products	
		5. Aggregated measurement of support	
	<b>Sub-theme: FINANCING FOR SUSTAINABLE DEVELOPMENT</b>		
	6. Total EU financing for development, by type	7. Foreign direct investment in developing countries, by income group	
		8. ODA, by income group	
		9. Untied ODA	
		10. Bilateral ODA dedicated to social infrastructure and services	
		11. Bilateral ODA dedicated to debt	
<b>Sub-theme: GLOBAL RESOURCE MANAGEMENT</b>			
12. CO <sub>2</sub> emissions per inhabitant in the EU and in developing countries	13. Bilateral ODA dedicated to water supply and sanitation		
<b>Contextual indicators</b>	<ul style="list-style-type: none"> <li>- Population living on less than 1USD a day (for sub-theme Financing for SD)</li> <li>- ODA per inhabitant in recipient countries (for sub-theme Financing for SD)</li> <li>- Population with sustainable access to an improved water source (for sub-theme Global Resource Management)</li> </ul>		





**THEME 10: GOOD GOVERNANCE**

*SDS guiding principle: Policy coherence and governance*

Level 1	Level 2	Level 3
	<b><i>Sub-theme: POLICY COHERENCE AND EFFECTIVENESS</i></b>	
	1. New infringement cases, by policy area	2. Transposition of Community law, by policy area
	<b><i>Sub-theme: OPENNESS AND PARTICIPATION</i></b>	
...	3. Voter turnout in national and EU parliamentary elections	4. E-government on-line availability 5. E-government usage by individuals
	<b><i>Sub-theme: ECONOMIC INSTRUMENTS</i></b>	
	6. Shares of environmental and labour taxes in total tax revenues	...
<b><i>Contextual indicator</i></b>	- Citizens' confidence in EU institutions (for sub-theme Policy coherence and effectiveness)	



# List of indicators to be developed

## *Theme 1: Socio-economic development*

- The feasibility of the ‘Genuine savings’ indicator (as developed by the World Bank) for EU countries should be studied and could replace the ‘Net national income’ indicator.
- An indicator on ‘Eco-innovations’ should be investigated and could replace the proxy indicator ‘Effects of innovation on material and energy efficiency’. ‘Eco-innovations’ are focused on an equation between environmental quality and economic growth.

## *Theme 2: Sustainable consumption and production*

### *Sub-theme ‘Resource use and waste’:*

- The headline indicator Resource productivity (currently defined as GDP divided by ‘Domestic material consumption’) should be redefined as GDP divided by ‘Total material consumption’. The indicator ‘Total material consumption’ is currently being developed within the European Statistical System, although it is unlikely to be available for a large number of countries within two years.

### *Sub-theme ‘Consumption patterns’:*

- Commission services have commissioned a study to produce an indicator for the measurement of ‘Green public procurement’ by 2008.
- An indicator on ‘Share of consumption of products with an ecolabel’ is needed. In the meantime, an indicator on ‘Awareness of ecolabels’ could be considered as a proxy.

### *Sub-theme ‘Production patterns’:*

- An indicator on ‘Nitrogen balance’ would be more comprehensive than ‘Livestock density index’ because it would include all sources of nitrogen and measure pressure more directly, but it would need to be developed at a regional level.
- An indicator on ‘Ethical financing’ should be developed.
- An indicator on ‘Share of industrial production from enterprises with a formal environmental management system’ is under investigation. When and if it became available, it should replace ‘Enterprises with an EMS’.
- An indicator on ‘Share of production of products with an EU eco label’ is under investigation. When and if it became available, it should replace ‘Eco-label awards’.
- Indicators on energy and material use per unit of output need to be developed per industrial sector, with NAMEA as a potential source.

## *Theme 3: Social inclusion*

### *Sub-theme ‘Monetary poverty and living conditions’:*

- The Social Protection Committee is developing a set of indicators on ‘Child well-being’. The child poverty indicator is already in the SDI list as a breakdown of the at-risk-of



poverty rate by age (for children aged 0-17). 'Child well-being' should be used to give room to other dimensions that income poverty: e.g. health, joblessness, poor education level, material deprivation, etc.

- A composite indicator on 'Material deprivation' is being developed by the Social Protection Committee and measures a lack of specific material resources. It should identify the most essential items that need to be available to households to avoid material deprivation.
- A composite indicator on 'Adequacy of housing conditions' is being developed by the Social Protection Committee.

#### **Theme 4: Demographic changes**

- An indicator on 'Health expenditure on old age' is not feasible in the medium-term. Commission services are looking at possible ways to overcome this problem.

#### **Theme 5: Public health**

##### **Sub-theme 'Health and health inequalities'**

- An indicator on 'Incidence of chronic diseases' is considered to be more useful than the death rate. However, the indicator is not expected in the medium-term.
- The Social Protection Committee should soon take a formal position on the indicator 'Unmet needs for healthcare, by income quintile', on the basis of the conclusions of its indicators sub-group, and this decision will be followed in the SDIs work.
- An indicator on 'Childhood health/diseases' has been proposed, but Eurostat is not aware of any work currently underway.
- An indicator on 'Dispersion of regional death rates' could be developed. It should exclude deaths of older persons.

##### **Sub-theme 'Determinants of health'**

- An indicator on 'Deaths due to infectious food-borne diseases' should replace the 'Salmonellosis incidence rate' when available. Data collection on infectious food-borne diseases has been taken over by the European Centre for Disease Prevention and Control. A Eurostat Task Force has been set up to define diseases related to food safety (i.e. caused by infection, toxins, etc.), to identify the most important ones, to propose indicators, and to report on sources and data quality. Conclusions from this Task Force are expected later in 2007. Depending on the results of this work, some indicators might become available by the end of 2008.
- It is expected that an 'Index of apparent consumption of chemicals by toxicity class' will be developed in the context of the REACH (registration, evaluation, authorisation and restriction of chemicals) Regulation, and will then replace the indicator on 'Index of production of chemicals by toxicity class'.
- Currently available data on contaminants and residues in food and feed are insufficient to compile the following indicators:
  - 'Dioxins and PCBs in food and feed'
  - 'Pesticide residues in food'



The Directorate-General for Health and Consumer Protection, the European Food Safety Agency, and the European Environment Agency, are the principal competent bodies.

- The European Foundation for Living and Working Conditions has published several reports on 'Work-related stress'. It has to be investigated whether these results could be used for developing an appropriate indicator on Work with a high level of job strain/stress.
- A proposed indicator on 'Monetary damage of air pollution as % of GDP' oriented towards specific health aspects would require consensus on the appropriate methodology and a commitment to regular production. The appropriate producer for this indicator has not been identified at this stage

## *Theme 6: Climate change and Energy*

### *Sub-theme 'Energy':*

- A number of difficulties have been encountered with an indicator on 'Radioactive waste' and the quality of the existing information needs to be assessed. Radioactive quantities have a wide range of risk and of processing complexity. The definition of high level radioactive waste is ambiguous. The much larger quantities of low-level radioactive waste and different levels of risk from different physical forms would not be regarded. In some countries with a military fuel cycle quite considerable quantities will not be included in this aggregate for reasons of security and this would compromise the indicator in Member States which also make extensive use of nuclear energy. Permanent disposal is a term which is sensitive to political interpretation and which could lead to further differences in application between Member States.
- The 'External costs of energy use' is prone to frequent methodological adaptations. The uncertainty in the health impacts of particulates is of particular concern. The regular production of this indicator according to an agreed methodology needs to be assured.

## *Theme 7: Sustainable transport*

### *Sub-theme 'Transport growth':*

- A study on best practice regarding 'Vehicle-km by road' has been carried out within a UNECE Task Force. This work will be taken over by a Eurostat Task Force. However, useable data are not expected in the near future. When available, this indicator should be added at level 3.
- Although there is no work currently being undertaken to develop an indicator on 'Use of public transport', this topic should be addressed.

### *Sub-theme 'Transport prices':*

- Directive 2006/38/EC amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures should make an indicator on 'External costs of transport activities' possible. Pursuant to this Directive, the Commission shall present a model for the assessment of all external costs for all modes of transport by mid-2008.
- An indicator on 'Investment in transport infrastructure by mode' could be possible if it were decided to revise Regulation (EEC) No 1108/70 introducing an accounting system for expenditure on infrastructure in respect of transport by rail, road and inland waterway.



### Sub-theme 'Social and environmental impacts of transport':

- It is hoped that an indicator on 'Exposure to noise from transport' will be possible with the implementation of Directive 2002/49/EC relating to the assessment and management of environmental noise
- An indicator on 'Fragmentation of natural and semi-natural areas' is considered essential either in this theme, emphasising transport, or in that on Natural resources, considering all causes. The final decision of placement depends largely on which indicator is produced and kept up to date by the European Environment Agency.

## Theme 8: Natural resources

### Sub-theme 'Biodiversity':

- A headline indicator provisionally labelled as 'Biodiversity Index' is being considered. An indicator on 'Abundance and distribution of selected species' is among the considered options, of which the Common bird index could be one of the components.
- An indicator on 'Change in status of species of European interest' should stem from reporting under the Habitats Directive.

### Sub-theme 'Freshwater resources':

- 'Index of toxic chemical risk to aquatic environment' or 'Percentage of water bodies with high or good ecological status', stemming from reporting under the Water Framework Directive.
- 'Concentration of organic matter as chemical oxygen demand of rivers'. When more data on COD become available, this would complement the indicator on BOD.

### Sub-theme 'Marine ecosystems':

- 'Effective fishing capacity and quotas', by specific fisheries. This would be a better pressure indicator on fish stocks than the existing 'size of fishing fleet'.
- Although there is no development foreseen for the indicator 'Structural support to fisheries and % allocated to promote environmentally friendly fishing practices' until at least 2010, the topic is kept in the list because of its policy relevance.
- 'Seagrasses' would also be a useful indicator for completing the sub-theme on marine ecosystems.

### Sub-theme 'Land use':

- An indicator on 'Percentage of total land area at risk of soil erosion' should be developed.
- An indicator on 'Deadwood' would be a useful indicator on forest management and could replace in the longer term the indicator on defoliation.



## *Theme 9: Global partnership*

### Contextual indicators:

- An indicator on the ‘Share of global greenhouse gas emissions from countries having agreed limits on their emissions’ could be developed as a contextual indicator.

### Sub-theme: ‘Globalisation of trade’

- An indicator on the ‘Sales of selected Fair Trade labelled products’ needs to be developed, based on reliable data, and representative of the whole Fair Trade movement.

### Sub-theme ‘Global resource management’:

- An indicator on the ‘Contribution of the Clean Development Mechanism to GHG emission reductions in developing countries’ should be developed.
- An indicator on ‘Global footprint’ measuring the EU use of global resources based on the ecological footprint methodology could be considered under this sub-theme, but is not currently considered for inclusion because of methodological shortcomings.

## *Theme 10: Good governance*

### Sub-theme ‘Policy coherence and effectiveness’:

- Following the Action Programme on administrative burden adopted in January 2007, the topic of ‘Administrative cost imposed by legislation’ could be considered in the set although there is as yet no commonly agreed definition for an indicator.
- The topic of ‘Impact assessment’ should be kept for future development, as there is currently no satisfactory concrete proposal for an indicator.

### Sub-theme ‘Openness and participation’:

- The topic of ‘Level of involvement of consumer groups and companies’, or the degree to which Member States run ‘Awareness campaigns’ could be considered for inclusion in the set if comparable data and indicators could be defined.
- The topic of ‘Public consultations’ should be kept for future development, as there is currently no satisfactory concrete proposal for an indicator.

### Sub-theme ‘Financing and economic instruments’:

- An indicator on ‘Proportion of environmentally harmful subsidies’ should be considered for inclusion in the set. Commission services are working on a definition sector by sector of ‘environmentally harmful subsidies’ to be available by 2008.



# Abbreviations and acronyms

## *Geographical aggregates and countries*

EU-27	the 27 Member States of the European Union (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 until 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 until 30 April 2004 (BE, DK, DE, IE, EL, ES, FR, IT, LU, NL, AT, PT, FI, SE, UK)
EEA	European Economic Area (NB: Depending on the context, this abbreviation may refer to the European Environment Agency)
EFTA	European Free Trade Association

## *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



### *Other abbreviations and acronyms*

AA	agricultural area
ACC	acceding countries
ACFM	Advisory Committee on Fishery Management
BOD5	biochemical oxygen demand over five days
CAP	common agricultural policy
CARE	community road accidents database
CDR	crude death rate
CH <sub>4</sub>	methane
CHP	combined heat and power
CIT	corporate income tax
CLRTAP	United Nations Convention on Long-range Transboundary Air Pollution
CMR	carcinogenic, mutagenic, reprotoxic (chemicals)
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
COD	1. chemical oxygen demand 2. causes of death
Coicop	classification of individual consumption by purpose
CPA	statistical classification of products by activity in the European Economic Community
CRF	common reporting format
CSR	corporate social responsibility
DAC	Development Assistance Committee of the OECD
DG	Directorate-General
EAGGF	European Agricultural Guidance and Guarantee Fund
ECCP	European climate change programme
ECHP	European Community household panel
EEA	1. European Environment Agency 2. European Economic Area
EES	European employment strategy (Luxembourg process)
EMAS	eco-management and audit schemes
Eurostat	the Statistical Office of the European Communities
ESA	European Space Agency
ESA 95	European system of national accounts
ESAW	European statistics on accidents at work
Esspros	European system of integrated social protection statistics
EUEB	European Eco-labelling Board
EU-SILC	European statistics on income and living conditions
FAO	Food and Agriculture Organization (of the United Nations)
FDI	foreign direct investment
FLO	fairtrade labelling organisations
FRA	forest resource assessment
FSS	farm structure survey
GDP	gross domestic product





GEC	gross electricity consumption
GERD	gross domestic expenditure on research and development
GFCF	gross fixed capital formation
GFP	good farming practice
GHGs	greenhouse gases
GNI	gross national income
GPP	green public procurement
GWP	global warming potential
GVA	gross value added
HBS	household budget survey
HICP	harmonised index of consumer prices
ICES	International Council for the Exploration of the Seas
ICT	information and communication technologies
IEA	International Energy Agency
IEG	international environmental governance
IPCC	Intergovernmental Panel on Climate Change
ISCED	international standard classification of education
ISO	International Organization for Standardization
LFS	labour force survey
LULUCF	land use, land-use change and forestry
MDG	millennium development goal
MEA	multilateral environmental agreements
NACE	general industrial classification of economic activities within the European Communities
NECD	national emission ceilings directive
NGOs	non-governmental organizations
NH <sub>3</sub>	ammonia
NMVOC	non-methane volatile organic compounds
N <sub>2</sub> O	nitrous oxide
NO <sub>x</sub>	nitrogen oxides
NSI	national statistical institute
ODA	official development assistance
OECD	Organisation for Economic Cooperation and Development
OJ	Official Journal (of the European Union)
PCB	polychlorinated biphenyl
PECBM	pan-European common bird monitoring scheme
PIT	personal income tax
PM	particulate matter
R & D	research and development
RDP	rural development plans
REER	real effective exchange rate
RON	research octane number
SAC	special area of conservation



SBS	structural business statistics
SCI	sites of Community importance
SDIs	sustainable development indicators
SDR	standardised death rate
SDS	sustainable development strategy
SF <sub>6</sub>	sulphur hexafluoride
SFM	sustainable forest management
SIs	structural indicators
SITC	standard international trade classification
SME	small and medium-sized enterprises
SO <sub>2</sub>	sulphur dioxide
SPA	special protection area
TERM	transport environment reporting mechanism
UAA	utilised agricultural area
UNECE	United Nations – Economic Commission for Europe
Unesco	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UIS	Unesco Institute of Statistics
VAT	value added tax
VOC	volatile organic compounds
WHO	World Health Organization
WTO	World Trade Organization

### *Units of measurement*

%	percent(age)
GRT	gross registered tonne
GT	gross tonnage
g	gram
g/km	gram per kilometre
GW	gigawatt
GWh	gigawatt-hour
ha	hectare (1 ha = 10 000 square metres)
kg	kilogram
kW	kilowatt
kWh	kilowatt-hour
LSU	livestock unit
m <sup>3</sup>	cubic metre
mg	milligram
mg/km	milligram per kilometre
mg/l	milligram per litre
pkm	passenger-kilometre
PPP	purchasing power parity
PPS	purchasing power standard
TOE	tonne of oil equivalent
tkm	tonne-kilometre



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### 2007 monitoring report of the EU sustainable development strategy

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